DOCUMENT RESUME

ED 418 236 CE 076 125

AUTHOR	Mehaut, Philippe; Delcourt, Jacques
TITLE	The Role of the Company in Generating Skills: The Learning Effects of Work Organisation. Synthesis Report. CEDEFOP Document.
INSTITUTION	European Centre for the Development of Vocational Training, Thessaloniki (Greece).
ISBN	ISBN-92-828-2367-9
PUB DATE	1995-05-00
NOTE	120p.
AVAILABLE FROM	Bernan Associates, 4611-F Assembly Drive, Lanham, MD 20706-4391; toll-free phone: 800-274-4447; e-mail: query@bernan.com; world wide web: http://www.bernan.com (catalogue no. HX-89-95-050-EN-C: 8 European Currency Units).
PUB TYPE	Reports - Research (143)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	Adult Education; Comparative Analysis; Competence; Continuing Education; Economic Change; *Education Work Relationship; Educational Policy; Employer Employee Relationship; *Employment Practices; Employment Qualifications; Foreign Countries; *Job Skills; Job Training; Learning Processes; Organizational Change; Postsecondary Education; Public Policy; *Skill Development; Synthesis; *Training Methods; *Vocational Education; Work Environment
IDENTIFIERS	*European Community; Global Economy; Learning Organizations

ABSTRACT

This report synthesizes the findings of a study of continuing training policy in nine countries of the European Community: Belgium, Denmark, France, Germany, Italy, the Netherlands, Portugal, Spain, and the United Kingdom. The following are among the topics discussed: the study's objectives and methods; characteristics of new forms of work and production organization (diversity of forms of work organization and production models; quantitative versus qualitative flexibility; reliability and adaptability of production; reliability of interorganizational networks; flexibility, adaptability, and training of operators); principles behind new forms of work organization (problem of the newness of know-how; main lines in organizational restructuring, links to the dynamics of know-how and skills; restructuring of know-how: the Tandem product/market or the "marketable product"? know-how or attitudes; distancing: necessary conditions for the training content of new organizations, trends and connecter-trends); the increase in training and shifts in training efforts; discrete knowledge and discrete training; explicit training (varied use of formalized continuing training, policy design and content validation, recogition, and certification); and new training practices, training policy, and employment and labor relations policies (links between forms of training in enterprises and initial and continuing training policies, consequences for employment and the labor market, reversibility and irreversibility of new forms of organization, actors and the social dialogue). The bibliography contains 143 references. (MN)

ED 418 236

CEDEFOP Document

The role of the company in generating skills:

the learning effects of work organisation

Synthesis report

European Centre for the Development of Vocational Training

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

CE 076 125

BEST COPY AVAILABLE

CEDEFOP Document

The role of the company in generating skills
The learning effects of work organisation
Synthesis report

Authors
Philippe Méhaut
Jaques Delcourt

May 1995

Thessaloniki 1997

Published by:
CEDEFOP — European Centre for the Development
of Vocational Training
Marinou Antipa 12, GR-57001 Thessaloniki
Tel. (30-31) 49 01 11; fax (30-31) 49 01 02
E-mail: info@cedefop.gr
Internet: http://www.cedefop.gr

The Centre was established by Regulation (EEC) No 337/75
of the Council of the European Communities, last amended
by Council Regulation (EC) No 251/95 of 6 February 1995
and Council Regulation (EC) No 354/95 of 20 February 1995

A great deal of additional information on the European Union is available on the Internet. It can be accessed through the Europa server (http://europa.eu.int).

Cataloguing data can be found at the end of this publication.

Luxembourg: Office for Official Publications of the European Communities, 1998

ISBN 92-828-2367-9

© European Communities, 1998
Reproduction is authorised provided the source is acknowledged.

Printed in Italy

TABLE OF CONTENTS

FOREWORD 1

CHAPTER I QUESTIONS/PROBLEMS/METHODS 3

1.1 CHANGES IN THE PRODUCTION PARADIGM, QUALIFICATION AND TRAINING 3

1.2 HYPOTHESES AND METHODS 5

1.2.1 Questions 5

1.2.2 The range of case studies 7

1.2.3 Limits to and difficulties of synthesis 9

PART I
TRENDS IN FORMS OF WORK ORGANIZATION AND NEW KNOWLEDGE 13

CHAPTER II THE CHARACTERISTICS OF NEW FORMS OF WORK AND PRODUCTION ORGANIZATION 13

2.1 THE DIVERSITY OF FORMS OF WORK ORGANIZATION AND PRODUCTION MODELS 13

2.1.1 Economies of scale in mass production 13

2.1.2 Economies of range in flexible production 14

2.2 BETWEEN QUANTITATIVE AND QUALITATIVE FLEXIBILITY 15

2.3 THE CHARACTERISTICS OF NEW FORMS OF WORK ORGANIZATION 16

FOCUSING ATTENTION ON THE MARKET, THE PRODUCT OR THE USER 17

2.3.1 Increase in and globalization of competition 17

2.3.2 Increased complexity and turbulence 18

2.3.3 The final market in the reorganization of the enterprise 19

2.3.4 From pushed production to pulled production 20
2.3.5 The need for total quality 21

2.4 RELIABILITY AND ADAPTABILITY OF PRODUCTION 22
2.4.1 The need to meet an increased number of standards 22
2.4.2 "Kan Ban" in the scheduling of production 23
2.4.3 The importance of information in a turbulent environment 23
2.4.4 Innovative speed and synergies between dynamic functions 24

2.5 THE RELIABILITY OF INTERORGANIZATIONAL NETWORKS 26

2.6 FLEXIBILITY, ADAPTABILITY AND TRAINING OF OPERATORS 27
2.6.1 The levels of education in the introduction of new forms of work organization 27
2.6.2 Continuing training and the increase in the average age of the working population 28

2.7 SOME CRITICAL REMARKS 29
2.7.1 Ambiguities and contradictions encountered in practice 29
2.7.2 Variability of models in connection with the macro-contextual variables 30

CHAPTER III PRINCIPLES BEHIND THE NEW FORMS OF WORK ORGANIZATION: NEW KNOW-HOW, NEW COMPETENCES 33

3.1 PEGGING OUT THE PROBLEM OF THE NEWNESS OF KNOW-HOW 33
3.1.1 Recognition or development of know-how? 33
3.1.2 Segmentation, destruction and redistribution 35

3.2 MAIN LINES IN ORGANIZATIONAL RESTRUCTURING, LINKS TO THE DYNAMICS OF KNOW-HOW AND SKILLS 37
3.2.1 Productive flexibility and operational multi-skilling: the economy of diversity 37
3.2.2 Functional redivision: multi-functionality 38
3.2.3 De-prescription and constraints of just-in-time: increase in managerial know-how 38
3.2.4 Quality 39
3.2.5 Economy of system: group work, networks, information and communication 40

3.3 THE RESTRUCTURING OF KNOW-HOW: THE TANDEM PRODUCT/MARKET OR THE "MARKETABLE PRODUCT"? KNOW-HOW OR ATTITUDES? 40
3.3.1 The "marketable product" 40
3.3.2 Know-how, skills and new salary attitudes 42

3.4 DISTANCING: NECESSARY CONDITIONS FOR THE TRAINING CONTENT OF NEW ORGANIZATIONS, TRENDS AND COUNTER-TRENDS 42
3.4.1 Internal conditions 43
3.4.2 "External" conditions 45

PART II
NEW FORMS OF WORK ORGANIZATION AND TRAINING 46

INCREASE AND SHIFTS IN TRAINING EFFORTS 46

CHAPTER IV DISCREET KNOWLEDGE, DISCREET TRAINING 49

4.1 DISCREET KNOW-HOW AND PRACTICAL SKILLS: A TWO-EDGED SWORD IN THE ENTERPRISE 49
4.1.1 The sources of discreet know-how and practical skills 49
4.1.2 The social functions of discreet know-how 50
4.1.3 Discreet know-how: a new challenge for the enterprise 50

4.2 THE MEANS OF LEARNING IN AND THROUGH WORK 51
4.2.1 Tutoring, learning by doing 51
4.2.2 The simulation of working situations 52
4.2.3 Primary groups and multi-skilling 52
4.2.4 Transversal groups and interfunctional relations 53
4.2.5 Human resources 54
4.2.6 Self-training 54

4.3 FORMALIZATION OF LEARNING 54

4.4 THE GROUPS AND DISSEMINATION/RETENTION OF KNOWLEDGE AND SKILLS 57
4.4.1 Resistance: one way of fighting against uncertainty 58
4.4.2 Towards new definitions of professionalism 60

4.4.3 The ambiguity of supervisory tasks in the face of their changing role 61
4.4.4 Other resistance to the redistribution of tasks and functions 62

CHAPTER V EXPLICIT TRAINING 64

5.1 VERY VARIED USE OF FORMALIZED CONTINUING TRAINING 64
5.1.1 From the absence of formalized training to a systematic plan 65
5.1.2 Public policy and refinancing 66

5.2 ENDOGENOUS TRANSFORMATION OR SUBSTITUTION; IMPACT ON RECRUITMENT POLICIES 67

5.3 DESIGN AND CONTENT OF POLICIES 69
5.3.1 Collective training/individualized training 69
5.3.2 Hierarchical segmentation 71
5.3.3 Sharing the training load 72

5.4 MAIN LINES IN TRAINING CONTENT 73
5.4.1 A return to initial general training 74
5.4.2 Extending technological and vocational know-how 74
5.4.3 Training in communication and group work 75
5.4.4 Increase in training in quality and management 75
5.4.5 Training for trainers and internalization of training 75

5.5 VALIDATION, RECOGNITION AND CERTIFICATION 76

5.6 THE COMBINATION OF DISCREET AND EXPLICIT TRAINING 80

CONCLUSIONS 84

CHAPTER VI NEW TRAINING PRACTICES, TRAINING POLICY, EMPLOYMENT AND LABOUR RELATIONS POLICIES 84

6.1 THE DEVELOPMENT OF DISCREET AND EXPLICIT FORMS OF TRAINING IN THE ENTERPRISE: LINKS TO INITIAL AND CONTINUING TRAINING POLICIES 84
6.1.1 The issue of know-how and skills 84
6.1.2 Return to initial training 86

6.1.3 The construction of continuing training policies: public encouragement and training forms 87

6.2 CONSEQUENCES FOR EMPLOYMENT AND THE LABOUR MARKET 88

6.2.1 Employment and unemployment 88

6.2.2 Exclusion 89

6.2.3 Contradictions in the restructuring of internal markets 90

6.3 REVERSIBILITY, IRREVERSIBILITY OF NEW FORMS OF ORGANISATION 91

6.3.1 Tension between groups and the sharing of knowledge 91

6.3.2 The role of managers and supervisors 92

6.3.3 Towards skill generating organizations 93

6.4 THE ACTORS AND THE SOCIAL DIALOGUE 94

6.4.1 Relative marginalization 95

6.4.2 Control and direct democracy 95

6.4.3 New spaces and desegmentation in training negotiations 96

6.4.4 Pertinent levels for negotiation 97

ANNEX 99

BIBLIOGRAPY 100

FOREWORD

Numerous continuing vocational training studies at both the national and Community level, especially those carried out by CEDEFOP on continuing training policy in large enterprises, have revealed the expanding role being played by enterprises in the development of human resources. This trend – which some see as heralding the emergence of a new division of responsibilities between those involved in training and production – undoubtedly calls into question their existing relationship and respective activities.

These studies also imply that, when it comes to strategies for developing human resources within enterprises, formally organized continuing training is only one of the options available for generating the "new" skills and competences considered necessary by enterprises. There are now organizational models geared to providing apprenticeship opportunities by exploiting the training impact of work situations, thus enabling a dialectic to be established between "formal apprenticeship" and "informal apprenticeship" (via work organization and cooperation between employees in the production and innovation process).

While they may make converging structural trends apparent, these new organizational models take on different forms and need not necessarily have any general application. The considerable difference between the contexts in which these models emerge means an analysis needs to be conducted of the relationship between an enterprise and its environment if there is to be an understanding of how the organizational models fit into the social context and what the scope and limitations are in a transfer of such models.

The primary objective of the present series of studies being undertaken by CEDEFOP in nine countries[1] is to establish the impact of developments in work organization on the skilling process and, more especially, to pinpoint the links between these developments and opportunities for formal and informal apprenticeship. These studies also enable light to be thrown on the nature of skills and competences which can emerge in the context of new types of organization and allow assumptions to be made about the impact of these developments on training systems.

A twin track analysis is pursued below. At the macro level, an attempt is made to "reposition the enterprise in the chain of skill generation" and to provide an interpretation of the mutual links between initial training, continuing training, the labour market and occupational relations. At the micro level, the aim – based on enterprise case studies – is to throw light on the various aspects of organizational innovation, developments in skills and the on-the-job apprenticeship process, in particular work-based and work-influenced forms of apprenticeship and how they relate to formal apprenticeships. In each country, enterprises were required to have a "marked and relatively stable level of organizational innovation" to qualify for case study selection.

---

[1] **Belgium, Denmark, France, Germany, Italy, Netherlands, Portugal, Spain, United Kingdom**

The present report deals with both these aspects without necessarily looking at all the cases studied. These are the subject of an analysis examining how the macro level interacts with the micro level which is presented in the summary that concludes this report.

Finally, a cross-sectional analysis based on the national studies identifies the converging and diverging developments which emerge in relation to their social context, notes the impact of these developments on the training systems and raises questions in respect of social dialogue and training policy decisions. This analysis is the subject of the summary report on "The role of the enterprise in the generation of skills: the training impact of work organization", published in the CEDEFOP Document series.

Our warm thanks go to those responsible for the studies at the national level and to all the members of the research teams involved in their successful conclusion.

Fernanda Oliveira Reis

Frédérique Rychener

CHAPTER I – QUESTIONS/PROBLEMS/METHODS

1.1 CHANGES IN THE PRODUCTION PARADIGM, QUALIFICATION AND TRAINING

In most European countries we have seen, in the last decade, renewed interest in vocational training beyond and outside the initial education system. This growing preoccupation with continuing training often has to do with two central issues. The first is unemployment and the contribution of continuing training to its prevention or reduction. The second is linked to a desire for productivity and competitiveness of enterprises. It is generally accepted that the European Union will only secure a favourable position in international competition by concentrating on the skills of its workforce and on activities with a high training content.

Innovation (in the many senses of the term, technological, product-oriented, organizational) implies that as this accelerates a workforce that is increasingly mobilizable (and mobilized) with a whole range of developable skills, able to cope with flexibility in work and greater external or internal mobility. Henceforth, competences (understood to mean the overall range of know-how and skills used in work) are a major economic factor.

The development of initial training systems linked with the increase in basic education, the emphasis placed (in the majority of countries) on vocational training, the growth in higher education have contributed considerably to this movement. For simple demographic reasons linked to the increase in the average age of the population and the drop in newcomers on the labour market, the renewal of the workforce is based, above all, on the endogenous transformation of the skills of those who are already in employment. Furthermore, the speed of competences development implies their regular updating. Henceforth, continuing training is a fully recognized in qualification and training policies [2]. The acquisition of skills during working life, therefore, plays a growing role in the generation of skills, in the career prospects of individuals and in the dynamics of organizations.

Skill acquisition is based on two elements: on the one hand, on what is traditionally called continuing training and, on the other, on the overall process of acquisition in the daily pursuit of an activity.

The attention given to the qualification of the workforce by the enterprise, the way in which these skills are to be developed, the role of the various parties in this development differ considerably, from one enterprise to another, from one branch to another, from one country to another.

a) The study undertaken by Eurostat on the workforce suggests that there is a variation of between 1-10 in the likelihood of access to continuing training; this is what interviewees indicated (Auer, 1992). This variation probably has to do with measurement problems (the study is conducted on individuals and records their participation in training in the four weeks prior to the interview) but also, more fundamentally, to very different social acceptance of training. Where the apprenticeship tradition is alive and kicking, individuals tend to spontaneously mention continuing training which, of course, includes aspects of on-the-job training. In situations where the school system is dominant, learning at work is not so much considered as training, it is less valued and, therefore, mentioned less. This also has to do with the difference in the forms of training linked to the kinds of work processes: in some processing industries the only way of acquiring skills is by way of experience or training on the equipment itself. The cost and conditions of operation forbids, in fact, any reproduction of this equipment for example in schools. Inversely, some activities mobilize more formal know-how, and are more along the lines of classical school-based instruction.

---

[2] By policies we mean public policies, enterprise policies, trade union policies.

b) The development of organizational forms of enterprises and, more particularly, what we have come to describe as the break with Taylorism seem to profoundly challenge the concepts of training: it is not only the case that some authors today put forward the hypothesis of a significant growth in the overall skill level of the workforce (as opposed to the theories of dequalification often put forward in the 1970s, cf. Braverman 1976) but there is also a tendency to say that these new areas are conducive to the acquisition of knowledge in and through work. To a certain extent "the training impact of work organization" (term introduced by Marc Maurice, 1987) is more marked, more open in these new organizations.

Today there is no general consensus on this hypothesis. Some analysts believe that beyond the phase of changes in production models, the absorption by machines of some skill elements and routine will lead to a new movement of dequalification. Other analysts stress the need to encompass the global nature of the process in the form of new bipolarizations of skills, e.g. via networks or on the international level (a highly skilled productive core and the delegation of skilled or unskilled tasks to the periphery). The conclusions will, therefore, vary greatly depending on the branch, the size of the enterprise or even the country. Taken to the extreme, the most acute form of bipolarization will be mass unemployment and, above all, in the lasting exclusion of some of the working population from any form of stable or skilled activity.

c) But if we take the idea seriously of an increase in and an extended desire for competences (at least in some sub-assemblies) we have to envisage multiple consequences both in terms of training policies and in terms of the labour market. Let us take a few examples:

■ To accept the growing role of knowledge generation by and in work is to question the effects on initial training. Is it not its strictly vocational dimension being replaced by cognitive skills (learning to learn?) and abilities to develop and innovate? This debate is taking place in many European countries. The macro studies conducted within the framework of this research [3] show that some countries tend rather to emphasise general training in the education system, leaving it to the enterprises to attend to vocational training going beyond compulsory schooling (UK).

Others are involved in a more or less advanced process of professionalization (F, E, NL, P). Others have a tradition of vocational training in the form of apprenticeship which is considered de facto or de jure as a full component in the initial education system (DK, FRG). The possible growth in apprenticeship forms in work could introduce tension depending on the educational model chosen.

---

[3] cf. infra, methodology

If the skill generating content of work is increasing this may, however, be restricted to a group or an enterprise. What are the consequences, therefore, on the labour market, on mobility? What are the new challenges in terms of certification, recognition of skills acquired in this way?

■ Public policies (national or community) often stress more formalized types of training (particularly continuing training). Don't they ignore other opportunities for learning?

■ On a wider scale, and taking account of the kind of competences required of staff, the increased importance is often stressed of behavioral skills: in new organizations the active involvement of staff is a determining factor, motivation, autonomy, an ability to cooperate are as important, if not more important, than "occupational" know-how and skills. This development would lead to informal types of more decisive occupational socialization than before. Cannot a whole series of conclusions be drawn concerning the content of training and the modes for the transfer of occupational "qualities" defined in the widest sense?

1.2 HYPOTHESES AND METHODS

The work conducted within the framework of the CEDEFOP project "Role of the enterprise in the acquisition and transformation of occupational skills" does not aim to offer an answer to all these questions. More modest, it wishes to throw light from the comparative angle of the European dimension, on some of the challenges which bring with them new forms of work organization in terms of qualification and training. This is an exploratory study, which does not aim to be representative, but which aims to identify the trends, and to explore in qualitative terms the shifts in challenges and practices. Throughout the report an effort is made to identify the main impact of these movements on policies (national and Community).

1.2.1 Questions

The study accepts the following:
For reasons which are upstream of the research framework, some enterprises have introduced active strategies for technical and organizational change which bring with them a break, to varying degrees, with their past organizational forms. These strategies have a profound effect on the content and organization of work, and in the development and mobilization of the skills of the workforce. They are also dependent on the existing potential for qualification. They alter the content and structure of jobs, the hierarchical levels and the links between the various occupational groups. The development in competences required is dependent both on the different forms of formalized initial and continuing training and also on the training potential of the organization itself. The implied increase in this potential raises the question of the different training policies pursued, and the various combinations between formalized and non-formalized training.

But this debate cannot be reduced to examining the "training impact" of new organizations. As stressed in the French summary, "There is a more complex dynamic interaction between organizational change and change in the ways in which know-how in the enterprise is built up and transmitted" (Villeval, 1993). This also constitutes a way of constructing an organization and making it dynamic. Therefore, we must identify not only how organizational innovation leads to increased (or different) skills but also how training strategies in themselves contribute to these organizational forms. We must establish whether they contribute to flexibility or not. These movements operate via various shifts amongst those concerned (within the enterprise, between the enterprise and training bodies, between private and public agents) but also by means of a transformation in these individuals or groups themselves.

This report, therefore, aims to explore the interaction between the new forms of organization and the processes for the renewal of competences which they call for and/or support, particularly via explicit or discreet training.

It, therefore, draws on knowledge already available, on the development of organizational forms and their determining factors (Chapter III) in order to focus on the processes for skill development introduced by the enterprise. A first question (Chapter III) has to do with the development of competences developed and used in new work organization (widely accepted by the work organization, moving from the specific content of tasks to be accomplished, the different forms of functional and hierarchical division up to forms of cooperation and conflict between groups in the same production unit).
The following two chapters explore the means by which enterprises introduce an active training policy for their staff, be this discreet training processes (Chapter IV), integrated into the work environment, possibly by means of formalization or explicit processes (Chapter V), closer to the traditional definition of continuing training. The emphasis is placed, more particularly, on forms of interaction, complementarity or substitution of discreet forms and explicit forms. Chapter IV examines the implications recombination of explicit or non explicit forms of training and a clear refocusing on the enterprise: groups which benefit or are excluded, consequences in terms of mobility and remuneration, new certification demands, role of the social partners and, more broadly, new combinations of agents (links with continuing training bodies, roles of public policies).

When examining new organizational forms, we tend to focus on the enterprise (or on some of its constitutive levels, workshop, service) in order to analyze the learning processes. This, therefore, means that other dimensions of training policies are ignored or underestimated: opportunities for individual continuing training outside the enterprise, which vary from country to country, are often ignored or poorly researched (e.g. the different formula for training leave); in the same way the accent placed on "informal" training and the enterprise as the starting point lead us to neglect the problems linked with external training provision, apart from recording them with respect to the enterprise "external" training practices and in the mobilization of one or the other types of training or one or the other categories of training bodies.

If some constraints or certain organizational forms seem to be transversal in some countries, the hypothesis is advanced of the existence and continuation of societal differences which stem from the initial educational systems, the dominant forms of labour market, work relations or, indeed, the national frameworks for continuing training. It is not a question here of expressing an opinion about the advantages or disadvantages of one or the other "model" but rather of examining how the dynamic processes take place within their national frameworks.

The methods used reflect these options. Each national team had to undertake two very different but closely linked exercises.

The first aimed to interpret, at the level of the macro society, the interdependencies between the development of initial training, the labour market, continuing training and work relations. One of the goals is to position the enterprise in the chain of skill producers but also to position the possible interaction between the different kinds of learning in line with the educational models in each country. The macro reports present the conclusions of this phase for each country. They offer an analysis of the characteristic principles of initial training systems, continuing training systems, together with the main features of the labour market and systems of work relations.

In a second phase, national teams were called on to select a limited number of observation units (enterprise or establishment) taking as the main criterion in their selection being organizational innovation. Observation focused on the various dimensions of this innovation, on the development of work organization and on learning processes at work in organizational change. Special emphasis was placed on the various learning opportunities in and by means of work (discreet training), on the interaction between these processes and formalized training, and on their results, particularly from the angle of the career prospects of the various categories of staff concerned. Each observation gave rise to the preparation of a monograph. Finally, a summary was presented by country which compared the results of the case studies with the macro work in the first phase. This report aims to offer a transversal summary of all this national material.

1.2.2 The range of case studies

The range of case studies was subject to constraints which arose from the conditions of access to the site since the approach implied extensive interviews on various levels of the hierarchy. It was also dependent on the conditions under which the different teams assessed the concept of organizational innovation:

a) Given the small range and the constraints of access to sites, it was not possible to give a strict definition of other selection criteria (e.g. sector, size, type of technology). The case studies, therefore, cover a broad range of situations. Some significant sub-units may, however, be the subject of more specific analysis (banks, automobile manufacturers and fitters).

b) The concept of organizational innovation was left to the assessment of each national team. The choices made reflect the relativity of the changes with regard to national characteristics. They are, themselves, a reflection of the kind of society. Let us take two examples: the selection in the French case is characterized by the hypothesis of a break with Taylorism and by the French debate on "skill generating". Part of the Belgian selection is guided by examination of operational posts for individuals without any basic initial training. In the same way, the focus in observation on the one or other dimension (dynamics of skills in Spain, "informal" dimensions of training in France and the local dimension of training in Denmark) reflects these societal models and the importance attributed in research circles or amongst social agents to the one or the other aspect.

c) Access and the privileged levels of observation are not always the same. In most cases the basic observation unit is the establishment. In some cases, however, organizational innovation has to do directly with a networked structure. Attention, therefore, focuses on the components of the network. At the closest level of observation (including interviews with staff) the choice is more varied. Some monographs concentrate on the workshop, others on the work collective, whilst others study an occupation or hierarchical level.

This heterogeneity renders any form of simple comparison impossible. But it does enable an examination of how innovation may have an effect on learning processes (be it only in terms of content), of different types of groups within the enterprise or different kinds of enterprise. For example, the introduction of just-in-time and the reduction in series production, of sub-assemblies for motor vehicles or hearing aids, bring with them other developments. For example, there may be similarities in the changes affecting production operators or scheduling technicians. Finally, beyond the obvious differences, lessons can be learned from what happens in some segments of industry and in banks. Altogether 47 case studies were undertaken in 9 countries participating in the network. The tables on pages 8 to 12 give a breakdown by country, activity and size

As we can see, the closest level of observation varies moving from a work collective, a workshop or a function within an establishment to a larger enterprise or group with more than 1,000 salaried staff in 30 cases. Only 4 cases concerned small enterprises with less than 100 employees. The conclusions of this report must be seen against the scope restricted to medium or large enterprises. The sectorial differences are greater at least in the secondary sector.

Apart from the banks (8 cases) only one Belgian case studied a classical tertiary enterprise. This does not mean that there is no interest in tertiary jobs (case of the French aeronautic industry, the German electronic industry). This under- representation is a clear limit to the work, particularly if we view this from the angle of discussion of the post-industrial society, services. This can probably be explained by the tradition in research circles who are more at ease in industry both in respect of concepts and sites. We must, therefore, bear in mind that the visibility of organizational change is greater in the secondary than in the tertiary sector: It is easier to identify significant cases for a first qualitative approach which perhaps also means that the temporality of change is not the same in industry as in services. The comparative study of industrial cases and banks shows, however, more similarity than would have been expected: some conclusions drawn in respect of industry can probably be applied to the tertiary sector.

In the secondary sector, we also cover capital goods, final consumer goods. We note the strong representation of the automobile branch, with 3 constructors and 3 fitters, electrical and electronic engineering (5 cases) and chemistry/pharmaceutics (6 cases).

When examining this material some intra-sectorial comparison data will be put forward. At all events, it is when examining this material in a more systematic way that more finely tuned comparative analysis will be undertaken (e.g. on all banks).

1.2.3 Limits to and difficulties of synthesis

Given the limits to the material, we must stress the important question of the impact of change as such and routinization. Observations offered spontaneously normally give a good assessment of the organization. But they only rarely permit more finely tuned comparison with the situation before (except in some monographs where the author had, himself, participated in earlier studies). We, therefore, trace developments by means of how the various people concerned perceive them without having direct observation for the two periods. Furthermore, we know that changing situations (or, for example, major malfunctioning, cf. De Terssac, 1992) are themselves learning environments but that the stabilization and routinization of procedures can lead to a progressive exhaustion of training contents.

Cross sectional observation, except in cases in which innovation was sufficiently advanced in order to ensure that the new organization was stable in some way does not allow a distinction to be made between the immediate impact of change (likely to disappear in time) and the lasting stabilization of a training content in the new organization.

We shall come back later to the question of skill generating organizations. In some countries this term has emerged only recently and is the subject of major research in order to define the contours of an organization which will be an on-going site for the accumulation of know-how by staff, the pre-condition for its on-going organizational flexibility. In Anglo-Saxon countries the older concept of the "learning organization" stresses the phenomena of retro-action and organizational learning but from a very different angle. It was not one of the explicit aims of this study to examine these two approaches. Nevertheless, in some case studies we are faced with situations, be they explicit or not, of "skill generating organizations".

A third remark on methods must be made in more detail concerning the question of Taylorism. We know that one easy form of representation involves the Taylorist model which would be opposed to new organizational forms likely to over-take it. A first doubt about this approach stems from the hypothesis of the "societal impact" which rules out thinking that "Taylorist" principles have developed identically in each and every country. At best there could be a plurality of Taylorisms. A second doubt arises from the way in which the range of case studies is, itself, made up. As the nature of organizational change was not standardized in advance, we certainly encounter paths which are based on a national Taylorist model and move away from this. Other paths seem, by contrast, to testify to the extension or anchoring of Taylorist principles. Others, finally, are characteristic of organizations which, in the beginning, were far removed from Taylorist principles. As far as possible, we shall endeavour to describe these various paths whilst avoiding talking about a single post-Taylorist model. More broadly our observations reject the idea of a unique trans-national skill model and any attempt to reduce training policies to the one formula. We shall not restrict ourselves to the most exemplary case, the introduction of just-in-time in the form which seems to be uniform and valid everywhere – Kan Ban we shall demonstrate how the variety of choices in the make-up of working groups, their degree of autonomy, in the way in which staff are initially trained and socialized opens up a very broad range of training situations and choices. Differences between countries shift, change, without it being possible to talk about convergence.

By way of conclusion it can be said that the question is far from neutral, that the desire to stress the training role of work situations implies that observation focuses on training situations which are, by definition, scarcely formalized even if, as we shall see, one of the trends is indeed towards formalizing learning approaches. Originally and for want of better, it was decided to distinguish between "formal" training (taking us back to the idea of an identified didactic situation, with a trainer, advancement) and "informal" training. This divide is of great significance for countries in which the school training model prevails (France, Spain, Italy, Belgium). It did not meet with the approval of countries in which the apprenticeship model predominates: some "informal" training situations are fully integrated into the overall training system and are part of a clear didactic strategy (e.g. project cases, didactics). When drawing up this report we, therefore, focused on the concepts of discreet and explicit training. By discreet training we mean all situations in which know-how and skills can be acquired without this being part of a didactic process (trainers, programmes, definition of goals) set up to that end. Explicit training can be defined as the overall situation for the acquisition of know-how and skills backed by didactic measures, be they instruction, workshop sessions, or self-training situations backed by some form of support (e.g. computer-aided education). Thus, for example, the time spent in an apprenticeship workshop under the German system comes rather under the second category. By contrast, the impromptu time dedicated to studying the features of a machine or a malfunction would seem to come rather under the first category. Indeed, we will examine throughout this report that it is the process of linking, exceeding or restructuring the borders between various explicit or discreet training situations which is one of the central issues at play in organizational change. We will have, therefore, to relativize the juxtapositions below in order to work on the continuation of training situations.

Case/ Country	Activity	Observation Unit	Size of enterprise/ unit	Main organizational form
B1	Luggage	Establishment	1000*/1000	Assembly lines towards production cells + TQ
B2	Chocolates	Establishment/ Production	2500*/450	Automation + multi-skilling + TQ
B3	Lighting	Establishment		Quality control + semi-autonomous groups
B4	Car fitter – headlights	Establishment	27000/400	JIT + Kan Ban + production cells
B5	Pharmaceutical	2 workshops	2000*/100	Total quality + multi-skilling
B6	Commerce chemical products	Enterprise	15/15	Multi-skilled salespeople
UK1	Automobile	Establishment	35000/900	Flexible automation + independent groups
UK2	Bank	Establishmet + Head Office	40000/40	Computerization
UK3	Petrochemical	Establishment	13000/500	Autonomous teams + desegregation of manufacturing and maintenance

Case/ Country	Activity	Observation Unit	Size of enterprise/ unit	Main organizational form
E1	Agro-food	Enterprise	180/180	Automatic production line
E2	Bank	Head Office/ Agency	13000/50	Computerization
E3	Aeronautics	Establishment	/350	Flexible automatization + JIT + TQ + multi-skilling + independent groups
E4	Automobile		5400/	Line and central quality + multi-skilling
E5	Printing	Network	600/600	Technical innovation + sub-contracting
E6	Telephone/telecommunications	Establishment	4000/1000	Autonomous groups + multiskilling
E7	Aeronautics	Establishment	/200	TQ + flexible automation
E8	Textile	Establishment	80/80	Increased Taylorism
E9	Chemical	Establishment	/1800	Rigid automation + flexible element + TQ
E10	Chemical	Establishment	/1000	Partial automatization + reorganization of production lines
E11	Bank		17000/5000	Computerization + commercial reorientation
P1	Bank	Head Office	4000/	Computerization
P2	Electrical appliances	Establishment	/400	JIT + Kan Ban + TQ
P3	Machine tool	Enterprise	85/85	Product renewal Relation SO/Production
NL1	Putty and paints	Establishment + Head Office	3500/40	Multi-skilling – direct Management
NL2	Bank	Functional department	40000/30	Computerization + functional repositioning
NL3	Pharmaceutical	Production unit	/40	
I1	Chemical/ Pharmaceutical	Division	3300/1000	Reliability (internal and external)
I2	Mechanical engineering	Enterprise	75/75	Automation
I3	Informatics	Division	2000*/1000	Matrix organization
I4	Mechanical engineering	Establishment	/50	TQ
I5	Mechanical engineering	Establishment	600/400	TQ, group work
I6	Bank	Head Office	15000/	Client relations
DK1	Bank			
DK2	Hearing aids	Production unit	730/250	JIT + TQ + autonomous groups
DK3	Pumps/valves	Autonomous establishment	150/150	Flexible automation + JIT + TQ + autonomous groups

Case/ Country	Activity	Observation Unit	Size of enterprise/ unit	Main organizational form
F1	Shoes	Enterprise	430/430	JIT + multi-skilling + autonomous cells
F2	Plastic car fittings	Enterprise	300/300	JIT + TQ + extension of tasks
F3	Electrical household appliances	Establishment and workshop	3000/660	Technological reorientation + simultaneous engineering + multi-skilling + JIT + TQ
F4	Manmade fibres	Establishment	40000/110	New automated technology + autonomous teams
F5	Aeronautics	Trade/function	50000/40	Functional realignment
F6	Aeronautics	Function	50000/200	Computer-assisted production management, decentralization + functional realignment
F7	Bank	Head office and branch	1000/40	Computerization
F8	Mechanic/car fitter	Establishment and manufacturing	1200/60	Decentralization + JIT + TQ + autonomous teams
F9	Lighting	Establishment		
FRG1	Electro-technical and transport	2 workshops	75000/	Multi-skilling + autonomous groups
FRG2	Car manufacturer	Establishment, manufacturing	/19000	Autonomous groups + reduction in hierarchical levels
FRG3	Telephone + telecommunications	Trade/ administration	4200/750	Computerization

2. PART I

TRENDS IN FORMS OF WORK ORGANIZATION AND NEW KNOWLEDGE

CHAPTER II – THE CHARACTERISTICS OF NEW FORMS OF WORK AND PRODUCTION ORGANIZATION

2.1 THE DIVERSITY OF FORMS OF WORK ORGANIZATION AND PRODUCTION MODELS

In the search for increased productivity and profitability advanced societies and enterprises face with a dual situation: on the one hand production and mass consumption and economies of scale, and on the other that of flexible and differentiated production, quality and diversity in the search for economies of range.

It is assumed that new forms of work organization and production are emerging. This does not mean that traditional forms are out-dated. They can coexist and intermix. Consequently, it would seem illusory to count on a convergence or a homogenization of qualifications.

2.1.1 Economies of scale in mass production

In mass production, the Taylorist organization of work and enterprises leads to a separation of operational work, design, ordering and control. Against this background, the organization of work and equipment are viewed in line with a rational division of manual and intellectual work. Intellectual work has an effect on the organization of manual work and aims, by starting from the measurement of time, to simplify work by breaking it down into gestures and movements. Segmented work means that use can be made of unskilled or semi-skilled workers. Even if, nowadays, we are moving away from work segmentation, new principles such as just-in-time for example are part of the philosophy of a rational and functional division of work. Thus, considerable efforts are being made towards rationalizing and fragmentating work. Much technological research is continuing along this line including service activities as, for example, in the banking sector (using cash dispensers), in travel insurance or in health care.

In the long-term, the breakdown of manual and intellectual tasks promotes the replacement of workers by automated mechanical machines and circuits. Taken to the extreme, productive intelligence will be incorporated into machines. With this in mind why are we seeking to mobilize intelligence and train workers? In many activities, automation and the worker-free enterprise continue to be the focus. In this framework, production units are run by operators sitting in front of control panels, by system control workplaces with experts capable of detecting and preventing malfunctioning. The Toulouse case (F4) is a typical example. Until the breakdowns of machines and shortcomings of workers have been remedied, the enterprise looks to multi-skilled breakdown drivers with, in the background, some rare expert breakdown drivers for non-automatically diagnosticable breakdowns (Michel Freyssenet, 1992, p. 481). This automation concept is gaining ground and is prompting research in production techniques and sciences.

In this system there is not just a separation of the functions of design and operation but also between the enterprises which are "doing" enterprises and those which are "knowing" enterprises. The former are governed by Taylorist principles: production operates more under the constraint of the clock and schedules. By contrast, in knowing enterprises the differentiation between tasks and cooperation between staff are less subject to the constraints of physical or intellectual productivity indicators even if, for example, account is taken of the number of patients or files dealt with in a specific period.

The concept of mass production, the search for the "one best way" or "best practice" have not been abandoned. In "the MacDonaldization of society" George Ritzer also demonstrates how this model has been extended to the services sectors which so far, in part at least, had managed to escape. According to him, the same applies to activities in the catering or hotel industry, in the production of goods and cultural services, in recreational and tourist industries, and even in health and education (G. Ritzer, 1993).

In some of the cases of new organizational forms analyzed in this international study, there is a shift from production of a craft nature to one of the other forms of mass production as in the Spanish case (E1) which deals with the setting up of an industrial bakery. However, today there are still many forms of new organization which are moving away from this Taylorist or Ford philosophy.

2.1.2 Economies of range in flexible production

The globalization of markets, stiffer competition, more flexible technologies, better trained workers and consumers with differentiated and changing expectations lead to a search for more differentiated products and qualities and to alternative forms of productions which are both specialized and flexible. Hence, the redevelopment of production on small or medium-scale based on a craft model along the lines of economies of range and diversity.

Currently it is difficult to say that the philosophy of differentiation will replace the philosophy of mass production even in the most developed countries because these two philosophies complement each other. In mass production the search for economies of scale is often combined with the search for economies of range. In the same way in sectors in which the economy of range prevails, the concern for having sufficiently large series is never absent. The variety of products is often a result of the modulation of mass produced components. Together with A. BRESSAND and K. NICOLADIS (1988), it could be said that "made to measure" will introduce a new form of competition.

Without taking a stance on the longer term trends in qualification or dequalification of work, the choice in this research to analyze new forms of organization of production and work led the experts to concentrate on cases in which there was a variety in products, a search for total quality whilst observing deadlines and with a minimum of stocks or, in cases of flexible and reprogrammable production, those in which independent teams are working or in which there was move to reduce the hierarchical line and those in which use was made of forms of partnership with the suppliers.

Compared with traditional forms, the new ones can be distinguished by their developmental character, by their struggle in the face of obsolescence and by the continued emergence of know-how and skills, by the desire to generate and recognize the competences acquired and to up-grade these qualifications by involving workers. According to D. TADEI and B. CORIAT (1993, p. 176), efforts are being made to establish permanent mobilization and initiative around technical tools.

These new organizations frequently, but by no means always, lead to the development of know-how of operators be this directly by way of repetitive learning or continuously, during work or by formal training sessions outside the enterprise under the supervision of internal or external trainers.

There are various ways of coping with these new dictates and these vary from sector to sector, country to country, social context to social context and culture to culture. Contrary to popular opinion, the change has not led to a homogenization (Japanization) of production conditions in the enterprises. Stiffer competition has not led to convergence or to coherence of practices at organizational level. It is even likely that heterogeneity is on the increase. Even if work is becoming more abstract, as in the surveillance of automated machines on screens, and even if a larger share of work consists in manipulating information, it would seem that the specific knowledge required varies considerably depending on the task of the enterprise. Unlike traditional forms of work organization, the new forms do not aim to circumvent skill generation by increasingly dividing up/breaking down tasks executed under the control of the hierarchy or according to the specifications of the enterprise. This does not signify the end of work prescribed in terms of tasks, operations or even goals but often it does mean the disappearance of part of the work directly related to the matter.

In the first part of this chapter an analysis will be undertaken, by means of the case studies, of the changes which have taken place in the course of the last few years in enterprises involved in producing goods or services.

In a second section various explanations will be given for that development. Depending on the cases, these changes will be justified by economic, technological or even social change as, for example, in the tastes and habits of consumers, in the levels of education, in the increase in the average age of the active working population or even in the aspirations and demands of workers and their organizations aiming to develop continuing vocational training and recognition of a right to life-long training.

In the last section, we will examine the coherence of the principles which serve as the basis for new forms of work organization and production and we will look at the contradictions which emerge both between the staff system and the economic and organizational systems. We will endeavour to identify the contradictions between these various systems which lead to paradoxical injunctions in the carrying out of work and in training.

2.2 BETWEEN QUANTITATIVE AND QUALITATIVE FLEXIBILITY

Given the challenges of all these changes, enterprises have begun looking for ways of increasing internal or external quantitative flexibility in work by down-sizing the workforce by means of redundancies, early retirement, fragmentation of jobs for example, by increasing part-time work or even by resorting to scheduled work, sub-contracting, to loans of staff, to temporary work or even to work at home. This quest is continuing even if in the eyes of many it seems to be basically negative given the social segregation which results from the differentiation in status and the precarious or dual situation induced.

However, in various enterprises it became clear very quickly that quantitative flexibility alone cannot offer a valid response to the challenges raised by competition, by accelerated developments and by knock-on innovations. Following the stiffening of competition some enterprises have discovered that in a production system in which volumes often fluctuate and in which variety, quality and innovation are a true challenge, functional flexibility and adaptability of human resources become strategic factors. Hence, the stiff selection on recruitment coupled with an increase in efforts aiming to extend the capacities of operators, and the assimilation and transmission of know-how and skills. The development of human resources becomes a driving force in the enterprise. The training process is part of an organizational and industrial strategy. It accompanies the re-profiling of products and the recombination of production and management processes. It is linked with research and development efforts.

Hence the growing and differentiated involvement of enterprises in the training/qualification of workers as a response to the changes to which they have been submitted or which they have generated. Hence, too the search for qualitative flexibility (which some people see as positive) by training operators, by stimulating exchanges of know-how and skills, by acquiring and making available the resources which encourage their self-training and, by extension, lead to the on-going adjustment of skills and competences. Hence, too, the increase in sessions, resources and techniques of training. This explains the desire, depending on the case, to recruit workers with a higher level of education even if they have not undergone specific vocational training as in the case of the Belgian car fitter (B4) and that of the pharmaceutical enterprise (B5). This also explains the desire to choose individuals who already have work experience and who have demonstrated a capacity to learn and to undergo training, or a decision to replace the traditional but outdated workforce with a new workforce as in the "putty and paints" enterprise in the Netherlands (NL1) where the move in the location of the enterprise offered an opportunity for substitution of this kind. The same applies to the French chemical enterprise in which two sites were closed when a new one was opened but where they only retained some of the old staff. Various alternatives are possible in attempt to improve the quality of human resources.

2.3 THE CHARACTERISTICS OF NEW FORMS OF WORK ORGANIZATION

From the very outset the question has been raised as to how the "new forms of work organization" differ from traditional forms?

In reality, both the old and new forms of work organization, production and enterprises are many and varied and developmental. Rather than setting the old "Taylorist" forms against the new "post Taylorist" forms, R. BADHAM and J. MATTHEWS, (1992) endeavour to classify them according to three dimensions.

1. The first dimension has to do with the variety and variability of products produced; depending on the case, we examine whether production is moving closer to that of "off-the-peg" or on the contrary to "made to measure" or, we look at the

developmental character of products, the importance of customer relations or commercial innovations;

2. The second focuses on the possibilities for programming and reprogramming production equipment and circuits and the more or less developmental character of production processes following accelerations in scientific and technical innovations;

3. The third measures adaptability, multi-skilling, independence and responsibility of workers and the participation, inventiveness and creativity required of them.

In reality the work units and groups in an enterprise are located at varying distances from the starting point of the three axes. The surfaces or volumes, which are part of one, two or three of these dimensions are infinite in number. During the same period, forms of mechanical division of labour exist alongside more organic and more professional forms of work. These imply the mobilization and increased responsibility of operators and an active encouragement of their participation. Nowadays, various factors promote richer forms of work organization and production.

There is a fourth dimension to this model because when (re)emerging as networks, as was the case for the Spanish printing house, the enterprises and workers are confronted with the complexity and turbulence of interorganizational relations.

FOCUSING ATTENTION ON THE MARKET, THE PRODUCT OR THE USER

2.3.1 Increase in and globalization of competition

The trans-nationalization of enterprises, the development of direct international investment, the emergence of the European Community and the free exchange with eastern European countries, the globalization of transport and communication networks and., by extension, the internationalization of networks for financial and commercial exchange, are all factors which have contributed to the appearance of new competitors, and to the globalization of competition and thus to the emergence of new models of production. The automobile sector is a good example (F8, FRG2, B4, UK1)

Today, competition is described as global given the geographical growth in the area for the distribution of products but also because there has been an increase in the range of products which are traded between countries. In addition to the prices factor, competition extends to the variety and the continued differentiation between products, variations in range, quality, reliability and adaptability of goods and services to the tastes and needs of consumers and final users. Competition, too, is also global because, in addition to production costs, it also has to do with a capacity for reprogramming and innovation and, thus, to reducing the costs and time needed to introduce an innovation, product or process. The ability to compete is, therefore, based on both a growing flexibility, and ability to react and anticipate (French national report, part 3) and thus on a continued renewal of competitive advantages (D. Tadei and B. Coriat, op.cit., p.151).

Against this background the flexibility both of production systems and forms of work organization take on a central importance, as does the adaptability and creativity required of operators in all areas in which competition can play a role. Innovation becomes an essential condition for survival.

2.3.2 Increased complexity and turbulence

Confronted with differentiated and volatile markets given the variety of products (e.g. the Belgian producer of car headlights) and the extension of ranges or demands depending on destination (e.g. the Dutch chemical enterprise or the Belgian pharmaceutical producer) or depending on the categories of consumers or users (e.g. in the production of machine tools in Portugal) and given the rapid and complex changes in the environment, organizations are searching for diverse forms of flexibility and new combinations of economies of scale (mass production) and economies of range or diversity (flexible and differentiated production systems).

Whether industrial or services production, they have to increase economies of scale whilst at the same time differentiating and diversifying products, services and servo-products because the distinction between products and services is disappearing. Thus, mass production is not condemned. It may even develop, as for example, in the production of modules and components. There are also sectors where there is a shift to continuous production in order to supply, for example, large commercial chains. However, today, there is a series of factors which encourage the shift from large-scale production coupled with mass consumption to flexible, modulated and differentiated production in line with consumer demands. Of course we can ask ourselves to what extent the attention given to the desires, tastes and aspirations of consumers is real? The constant change in products could be one way of artificially making them out-of-date. In this case, the focusing on the client is nothing other than a marketing technique and the change, the result programmed by the producer.

To characterize these developments, Alvin Toffler, for example, talks of the trend away from mass production and standardization of products. Not only are they becoming more differentiated but they can rapidly replace each other. Their life cycle is shortening, markets are becoming volatile.

However, even if a growing number of products are, so to speak, crammed with intelligence (e.g. computers, robots) or culture (by way of the "design" of the products or their packaging for example) this does not mean that the cultural content and intelligence of tasks undertaken by the operators have necessarily increased. The sophistication of products does not imply that their assembly or handling have become complex (camera or video-camera are typical examples) or that their maintenance and repair are less easy because the components for the various functions can be easily replaced. All the same, it is by no means rare that the variety and variability of products leads to profound changes in the information required by operators on the markets, commercial practices, relations to be established downstream with a multitude of clients and users or upstream with the suppliers of materials, multiple segments and the components.

In advanced societies productive and commercial organizations face complex and changing situations and environments. Uncertainty and risks are on the increase. Even if there is an abundance of information, it is often difficult to interpret. It is Igo Ansoff who has best stressed the disassociation between internal efficiency and external efficacy of enterprises confronted with various forms of environmental turbulence provoked by competition.

In a world characterized by turbulence and complexity, no solution can be effective for a long time, hence the continuous transformation in work and organization and in networks of interaction.

When innovations take place and spread rapidly the obsolescence of products, tools and man is a constant threat. Linked to the efficacy and the responsibility of operators, quality, variety, flexibility and adaptability are on the agenda. But these abilities do not develop without stimulation or the intellectual commitment of workers and without training efforts by enterprises and, in parallel, learning by operators.

2.3.3 The final market in the reorganization of the enterprise

In the last few years the attention of enterprises has moved increasingly towards the market and individualization of goods, towards users, patients, consumers and clients. This has not prevented, in many cases, products being manufactured in the hope of imposing them on consumers as was the case in France with "minitel". And yet enterprises are increasingly anxious to follow, anticipate or inspire demand. This orientation is strengthened by the development of what is called "the ethics of the consumer" as if enterprises where seeking to detract the attention of their staff from the confrontation between capital and labour and to direct it towards the market and a vision of the enterprise in terms of supplier/client relations. From the angle of "market ethics" the quality of relations between workers and sales staff or clients takes on strategic importance. The stressing of the link to the market in the justification of change undoubtedly helps to find forms of consensus which would be difficult to imagine in an enterprise structured along the lines of confrontation between capital and labour.

The growing competition on the national and world stages is one of the major explanations for the enterprise shifting its attention downstream towards the market and towards the need to offer a better response to spontaneous, constant, variable, current or specific demands of users and final consumers or, quite simply, to demand constantly being reshaped by advertising. It is no longer a question of producing homogeneous series but diversified and differentiated products adapted, if necessary, to the needs of a specific kind of user. This is, for example, the case in the enterprises producing or marketing chemical cleaning agents (NL1 in the Netherlands and B6 in Belgium).

In some sectors the product innovations follow at a high speed, for instance informatics but also in the machine tool sector or in the domestic appliances sector. The French enterprise in the household electrical appliance sector (F3) is a typical example. Hence the need to identify possible choices in order to achieve differentiated products and extended ranges drawing on variety, reliability, durability and the quality of goods and services on offer. To "zero defect", "total quality", "zero complaints" and "zero return" become essential features for operators be this on the individual or collective level and this in parallel to the goal of shortening and strictly adhering to delivery deadlines. By respecting these quality dictates, the enterprise will be able to count on the loyalty of its clients or contractors and to reach its goal of "zero loss of customers". It is easy to measure the scale of customer loyalty.

In order to succeed the organization becomes decentralized and gives more autonomy to the production system. In this way it seeks to lend a readier ear to customer demands be this when they order, when they purchase, in after sales service or by way of surveys of users and consumers and, in certain cases, by audits by the enterprise of users of potential products (goods or services). This is a frequent practice in the automobile sector but we could easily quote other examples in the economy in which franchising is spreading.

This autonomy does not necessarily mean the end of control. Quite the contrary, new modes of surveillance have been set up by means of computer-backed forms of control or quality control and different types of "feedback" sought amongst users or clients. The control of efficacy in the enterprise, but also of workers and their work, is reflected in the recognition of the quality of the goods or the service rendered to purchasers and in the expression of their satisfaction. From the point of view of the worker, hierarchical control is doubled when there is control by the client and reactions from the market.

In traditional forms of organization, production develops upstream in line with the specifications of the production scheduling officers. In new organizations the attention of operators focuses on the demands of the market. In many enterprises analyzed by various teams, the reorganization of work aimed to better follow the developments of markets, to position itself in respect of expectation in terms of quality, and to follow more clearly changes in expectations and tastes of consumers, the various demands of users, ordering parties or contracting parties, and to conform to stipulations in suppliers' contracts. Thus the new forms of organization work within industrial or tertiary enterprises seem to define themselves from the Archimedean point, which is their relationship to the market. The goal is to obtain the best possible adjustment between supply and demand of products and services. In many cases the reorganization of work and the production space derives from the extension of the range of products and components produced because the variety of production is often imposed in parallel to demands of quality and delivery deadlines.

There are many cases which offer a clear demonstration of this restructuring downstream line as a function of the market, as in the production workshops of machine tools in Portugal (P3), with the car fitters, the production of headlights in Belgium (B4), in the production of turbo engines in France (F8) or even in the Netherlands in the new factory involved in the production of paints and chemical cleaning agents (NL1). In all these cases the differentiation of production and products "total quality" and "just- in-time" are the leitmotifs for flexible production and specialization. The organization is equipped to respond to the market. It becomes the central determining factor of change (D. Tadei and B. Coriat, p. 204).

If this reorganization of work in line with the constraints of the market is to be successful, the scheduling of production and the management of the enterprise must be rethought the "other way round" beginning with orders, and the definition by the consumers of the goods to be produced and thus the logistical implications from the point of view of the enterprise, its different services and suppliers and sub-contractors.

2.3.4 From pushed production to pulled production

Nowadays the organization of enterprises is less and less top-down. The scheduling of production is less and less pushed by the logic prescribed by the work organization services. The production logic is being turned round. Rather than being pressing or pushing it is pulled and inspired by the market. The logic of command is gradually replaced by pushed production. This leads to change in the way in which enterprises develop and schedule production flow and logistics by going back to the beginning of production operations.

The primacy of the logic of pulled production is of no economic relevance if enterprises manage to minimize their stocks upstream and downstream as well as their commitments whilst respecting their delivery times. Furthermore, in this kind of system they have to be able to put across their quality and delivery time demands to the network of suppliers. The latter, in turn, have to bring themselves into line with the production requirements of the ordering party.

In addition to ideological or political harmony, this focusing of the enterprise on servicing the market normally leads to a new structure within the enterprise in which the organization is constructed around a product line. The traditional functional division is replaced by a product division. This reorganization of the product area implies new forms of integration and coordination.
The introduction of new organizational modes can also be explained by the dimension, the cost, the capacity and the speed of production of instruments and equipment used and, thus, by the cost of breakdown and rejects in the case of malfunctioning of machinery.

The new work modes are justified moreover by the reprogrammability and the frequent reprogramming of machines which have to have the highest possible level of use. Variations in demand and variety in goods and services can only be catered for by developing capacities for reprogramming equipment and reducing time required. The new forms of work organization are finally justified by the on-going change in equipment. The depreciation periods are also becoming increasingly shorter. We shall return to this subject later.

2.3.5 The need for total quality

The new standards which have led to the introduction of new forms of work organization also include those which have to do with the variety but also the quality of products.

The quality of a product has various dimensions: it has to do with the appearance, efficacy, reliability, safety and length of utilization, security and, perhaps, its shelf life. But it also takes in the packaging where it must be biodegradable unless it has to be recycled. In addition to the statutory norms which protect the client or user, for example conformity and guarantee certificates, the rules relative to delivery times, there are cultural and social norms which have to be observed in customer care (reception for example) and also in the recognition of their needs and expectations.

In several case studies the standards are, above all, those of the ordering parties, users or assemblers who commission the sub-contractors when they are able to demonstrate their ability to respect quality and delivery standards. The example of Oticon, the Danish enterprise, is typical. But these demands from the ordering parties can be found in Belgium in the production of car headlights (B4) and in France in the production of turbo-compressor parts (F8).

This search for quality is all the more difficult for the workers when, given the effects of competition, the range of goods and services is constantly extended. This means changes unless their is rapid reprogramming of production programmes and thus of machinery and workshops in order to "produce the right amount of the desired quantity at the desired time" (French national report, part 3).

From the organizational angle the introduction of new forms of work is part of the search for total quality, not only with respect to the product but also to information and in the organization of work and in the enterprise itself. For that a whole series of indicators must be oriented towards the zero limit. This has to do both with stocks and with errors in information and transmissions, breakdowns, wrong manoeuvres, rejects, down-time, accidents, delivery times, absenteeism as well as strikes and, of course, loss of customers.

2.4 RELIABILITY AND ADAPTABILITY OF PRODUCTION

2.4.1 The need to meet an increased number of standards

There has always been a need to respect standards in production, composition, assembly or marketing of a product. Today, however, we can see an increase and a tightening of several standards.

This proliferation of standards may seem paradoxical in a world in which for some years now there has been a battle against rigidities, particularly of a social nature: rules concerning the fixing of salaries and their differentiation depending on individual or collective performance; rules on employment, recruitment and redundancy; rules to do with the status of staff and, more particularly, detailed professional classification grids. In very many domains there has been a shift towards stressing the need for flexibility and deregulation.

All the same, the controls developed by the enterprises themselves but also the constraints to which they are exposed are going to increase, be this because of private pressure groups or diverse social movements or because of the multiplicity of national and international bodies (e.g. the ISO 9000 standards).

In all events, the factors which encourage the use of new forms of work organization and enterprises include a commitment to accept a increasingly large spectrum of standards on products and packaging (depending on the destination and type of transport used as, for example, in the pharmaceutical and chemical products sector), but also the safety of installations, the handling and utilization of a series of basic products and materials, in the operation of equipment and production processes (e.g. in the production of paints, adhesives or coatings) or finally to do with environmental protection and the battle to reduce or eliminate waste. Other standards have to do with the organization of the working environment, hygienic conditions and safety at work, or even information to be supplied to the authorities by the enterprise, to the competent or supervisory bodies.

In many of the cases studied, particularly those having to do with the industrial sectors, these rules which touch on the safety but also individual and collective responsibility are some of the factors which have contributed to the introduction of new forms of work organization. The importance of this factor was identified in several case studies, particularly in the chemical and pharmaceutical enterprises. For that reason it deserves our attention.

The reliability desired in terms of equipment and staff is, of course, dependent on reliability in the utilization and consumption of products. This is the case in the production of medicines or in the production of planes or motor vehicles. However, the reliability of operators is also dependent on the dimensions and the costs of tools or installations, safety and hygiene standards, which regulate their use. In various sectors the confidence in operators in observing rigorously the safety and hygiene rules depends very much on their level of qualification. This is the case if we think, for example, about the nuclear energy sector. But these requirements can be found in many other sectors: food, chemical and pharmaceutical products.

2.4.2 "Kan Ban" in the scheduling of production

In industrial organization the scheduling of production faces two constraints: on the one hand reducing stocks and commitments and thus production and marketing time and, furthermore, maximizing the use of equipment and reducing the time for reprogramming the machines particularly when production is often varied and variable. Flexibility is on two levels: in production and programming of tooling systems and equipment, the goal being to eliminate non-productive time.

This "flexible" specialization and this "just-in-time" production, made possible by a fleet of machines and workshops which are reprogrammable, is organized via a dual flow: on the one hand that of materials, parts, components which go from upstream to downstream in the production circuit and, on the other hand, that of information which must be two-way. In fact some of this must go back through the production process beginning with the order from the client up to sub-contractors and suppliers of materials or components whereas other information moves down the production line. Hence the introduction of what those familiar with Japanese vocabulary call "Kan Ban". In fact these are information sheets passed from post to post, from group to group or even from service to service and, perhaps, from one enterprise to another. The main goal in the circulation of these Kan Bans is to organize a regular supply to the work posts and groups. We can see these Kan Bans at play in numerous cases. In Portugal in the enterprise responsible for making electrical appliances (P2) or in Belgium (B4) or, in general, in enterprises in which the just-in-tme principle has been introduced.

In complex organizations these sheets are often replaced or combined with computerized systems for integrated recording and automatic transmission. This leads to computer-aided programming and production based on full information circuits. The aircraft constructors in Toulouse are a typical example of computer aided management.

Reorganized in this way, the enterprise is now a chain of links from client to supplier in which each worker/supplier becomes in turn a worker/client. In this chain each supplier regularly receives orders from his clients and, in turn, is obliged to pass on orders to operators and services upstream. Depending on the individual case, the ascending or descending flows of information all along the production and distribution circuit are organized and integrated manually, mechanically or with computer backing.

2.4.3 The importance of information in a turbulent environment

Production or commercial organizations are confronted with a complex and changing situation in the technical, economic, organizational, social and cultural areas. These production conditions are profoundly changing the information required on markets and commercial relations: downstream with clients and users and upstream with suppliers of materials, segments and components. The organization becomes a network of external transactions: we talk about the emergence of enterprise networks. The growing complexity of networks of innovation, supply, production and marketing could not be managed without collecting a certain amount of data and information, without accelerating their transmission and their processing, without increasing and speeding up interfaces, or without linking up communication systems between enterprises.

But internal transactions are also on the increase. In the enterprise the functional interconnections are growing. Interdependence is growing between the functions moving from the design of a product to its production and marketing. Close links have to be established between them. There has to be transparency of information. The networks for innovation, production and distribution are becoming increasingly complex and could not be handled without developing functional interaction, increased interfaces, the collection of a growing volume of data information, a doubling of the production flow by a flow of information, by integrating communication systems, by accelerating these, by ensuring the instantaneous processing and transmission of information, without making use of a cybernetization of organization.

In the organization total quality not only concerns the products but also the information and both internal and external communication. The most typical example of this synergy can be found in the French aeronautical construction sector where the development of integrated functions for the scheduling of production led to the introduction of many new organizational links. In the same way, enterprise NL1 in the Netherlands is a good example of this integration of communication as is the German telecommunications enterprise (FRG3). However, developments of this kind can be seen in other sectors too. The Portuguese enterprise for machine tools shows this essential synergy between production and design functions but it also demonstrates that this synergy does not necessarily take place via formal systems of communication or by the intermediary of structured ad hoc groups.

2.4.4 Innovative speed and synergies between dynamic functions

The changes in the production and innovation structures in the research and development structure are related. Production, which is both subject to demand pull and supply push, involves new combinations of real and tangible investment and intangible investment. It involves the functional desegregation of design and production and the desegregation of research, work organization and training.

The importance attributed to quality, variety, reliability and adaptability given competition between enterprises presupposes the taking on board of a new production and managerial system aiming to set up articulation and arbitration in a more intensive manner between the demands of the market and the technical and scientifical possibilities, between consumption and marketing constraints, and furthermore, those which arise from the new forms of production. The dynamism of the enterprise depends on its ability to constantly renew and differentiate its range of products. In the French enterprise which manufactures household electrical appliances, 40 % of its turnover is achieved each year with new products. Of course one could debate the innovative nature of the products. But this discussion would still lead to the conclusion that it is difficult to constantly renew the range of products without, at the same time, reviewing production methods and processes. Under these conditions, the survival of the enterprise depends, in the final instance, on its "innovative speed" with regard to its products as well as its production processes.

In the development of production a synergy is most often required between the two major sources of innovation, on the one hand what stems from knowledge of the market and on the other research into products and processes. Functional integration not only concerns research and engineering but also production and marketing. Entrepreneurial management not only attributes importance to research and development services but also to the analysis of markets and to marketing and to modes of coordination between these different types of services.

In several of the enterprises studied, this organizational integration is undertaken by means of an informatics network, as in the case of the aeronautic enterprise in Toulouse, or by the simultaneous introduction of engineering tools, as in the case of the French enterprise producing household electrical appliances, where attempts are made to simultaneously design the product and how it is produced or by the development of transversal and trans-hierarchical project groups, development units bringing in both those responsible for scientific and technical research and those responsible for the commercial side in order to ensure that they coordinate their goals and actions. The same applies, for example, to the Belgian pharmaceutical enterprise (B5) because in this sector the viability of projects depends on the quality of the successful combination of the demands of science and the dictates of the market.

In reality, there are very few sectors which are influenced by only one of the two innovation poles. It would, therefore, be wise, as suggested by C. Freeman, to attribute major importance to the mechanisms of interaction between "technical feasibility" and "market opportunities", in other words to the combination in the enterprise of technical, scientific dynamics and commercial dynamics.

These functional requirements not only concern large enterprises or enterprises with a scientific and technical foundation. According to G. Gilder (1981), recent and major innovations are not just the property of large enterprises but also of small and medium-sized enterprises. This is the case with innovations in informatics, in micro-electronics, new materials and biological engineering for example. Again, from the angle of innovation, the fact that there is a shift away from standardized production, in order to cater more for the requirements of users or the preferences of users or clients, leads to a search for pluri-functionality, reprogrammability, connectivity and thus to flexibility in equipment and tools. The new machines are designed for multiple use. The artificial intelligence incorporated into the machines is becoming increasingly important because it facilitates reprogramming. The workshops are set up in a flexible manner. Much effort is being put into ensuring the greatest degree of efficacy, the largest degree of reliability and the maximum in flexibility.

The qualities which are demanded of the machine are often those which are demanded of its operator. These qualities will gradually mean that the machine can replace the operator. Indeed, the intelligence incorporated into the tools and equipment is not enough and, more often than it would appear, presupposes intelligent handling. The artificial intelligence incorporated into products or processes is of no value unless coupled with intelligence in the operators and their contribution by way of suggestions and participation in quality and project groups, either with or without the support of the trade unions.

But we should not imply that their is a general tapping of the intelligence of operators. In several automated production lines, it is rare for the intelligence of operators to be tapped to any major degree. The skills they are required to show are attention and surveillance.

In the same way, in many activities for the production of goods and services no demand is made of workers to be innovative. Many productions are not based either on science or on high technology, particularly as in these two areas many industrial and service enterprises rely on the suppliers of technology in order to develop their productivity or their products. However, in many of the cases analyzed, the intelligence of workers is indeed being tapped.

2.5 THE RELIABILITY OF INTERORGANIZATIONAL NETWORKS

Interorganizational relations often develop in parallel to intra-organizational relations. This is one consequence of a shift towards the client and partnership orientation.

Against the background of the emphasis of the client/consumer, "made to measure" and order specifications take on particular importance in respect of standardized or mass production. In an economy of range and options this brings us back to the possibility of differentiation and personalization of products.

In this economy oriented towards quality and variety, suppliers and sub-contractors must also adhere to demands of quality and delivery deadlines. The adaptability and flexibility of products and production processes implies increasingly close relations between enterprises. Zero faults, zero delay, total quality and flexibility in the enterprise are the demands which must be taken up by operators. They must also be demonstrated outside to all suppliers and sub-contractors of information, components or base materials. Today it is by no means rare for a contracting party not only to supply orders but also the sites, machines and skills and the authorization enabling the sub-contractor to develop. Against this background the supply and sub-contracting contracts lead to partnership forms, particularly when specifications reduce the opportunities for recourse to the market and to competitors.

The increase in the forms of co- and sub-contracting, but also in scheduled work, can be explained by the introduction of various forms of decentralized management in enterprises. These forms enable new organizational architecture, the restructuring of large enterprises as small or medium-sized enterprises or profit centres with varying degrees of autonomy, even the geographical devolution of various services or phases to a production circuit in which each of the groups or each of the phases is placed in relation to the client/supplier. The French case of the enterprise producing turbo compressors is worth noting in this respect as is that of the Spanish printing house designed as a networked enterprise. The enterprise networks become a form of coordination along the same lines as the market and organization. The networking and inter-linking of enterprises seems even more closely woven when adaptability and innovation become central features in the functioning and the development of an enterprise.

These networks of co- and sub-contracting have been extended to a whole spectrum of services to enterprises. The more or less regular use of external services may involve marketing, production but also research: product or process innovation. These services rendered to enterprises are, furthermore, one of the most dynamic tertiary sectors in modern economies. Indeed, "the more innovation plays a determining role in commercial success," said D. Tadei and B. Coriat, "the more it seems that each enterprise will only be able to maintain its standards of excellence in limited areas". These co- and sub-contractors become all the more important because they have the know-how developed in specific fields (1993, p. 245). Strategies of alliance, agreements on sub-contracting and cooperation, partnerships develop whereby they aim not only to achieve product or process innovation but sometimes also to generate and transfer know-how and skills to the staff and operators in networked enterprises.

The extension of the fields and levels of cooperation between the enterprises leads to the development of an economy of transactions and contracts. This implies the implementation of policies aiming to create integrated circuits of information between the enterprise, its suppliers and its sub-contractors and even downstream with commercial chains. Hence the efforts to guarantee the reliability of information networks and by this channel the reliability of supply and distribution networks so essential to the functioning and profitability of the enterprise.

The networking of enterprises will, in turn, change the path of access of workers to new know-how and new skills. In fact, in enterprises structured along the basis of partnership networks, a growing number of operators have established contact with workers in other enterprises in pivotal or border posts be this on the level of research and development because the production of new products, hardware and software implies close cooperation between laboratories, suppliers of equipment, universities; on the level of the production function because the expected equipment varies depending on the orders of the client or, on the level of the commercial function because the customer service makes necessary close and regular contact if the enterprise wants to offer the customized services which are sought after (cf. B6 in Belgium).

Thus the creation and extension of functional organization of networks leads to a growing complexity in the roles of various operators but also to new modes of management, control and work evaluation.

2.6 FLEXIBILITY, ADAPTABILITY AND TRAINING OF OPERATORS

2.6.1 The levels of education in the introduction of new forms of work organization

Various factors can explain the emergence of new forms of work organization, production and enterprises such as scientific and technical developments, competition constraints but also a series of social factors and social change. These social factors certainly include the "can't be bothered attitude" provoked by assembly line work, fragmented and routine work broken down between different, strictly defined posts; a mode of work organization characteristic of large-scale production. This type of organization is rigid, bureaucratic, hierarchical and disciplinary. The know-how and skills required are limited to a strictly defined post. The dissatisfaction caused by this kind of organization is reflected in various factors: there is a high rotation of staff, absenteeism for whatever reason is high, negligent behaviour leads to various breakdowns and rejects and this despite the pedantic surveillance and reinforced bureaucratic management in the face of which everyone begins to play "cat and mouse".

The use of new forms of work organization and the need for life-long training in the development of human resources in the enterprise are justified by the increased demands of workers given their trade union membership, but also as a result of the rising level of education in the working population. This leads in total or in part to a rise in the level of qualification even if the competences acquired in schools do not necessarily correspond to those required by the enterprises. This higher level of schooling leads to expectations and aspirations for interesting work, good working conditions, as well as for opportunities for development and a professional career.

This higher level of schooling should also be incorporated in analysis of "discrete training" The apprentices or groups linked to a workpost may have varying work content of a different quality than groups with a higher level of basic training, greater powers of abstraction and thus different potential for auto-apprenticeship.

The operators want to have more independence in their work. They want to be able to undergo training to obtain qualifications and to extend their career prospects. This is all the more so the case because workers who undertake purely routine tasks understand that they are very much at risk of being demoted or even eliminated from the production process. Thus enterprises find themselves face to face with workers who are against fragmented work, disciplinary control or even rigid hierarchical commands be this in the workshops or offices.

Often the new forms of organization are accompanied by the development of a new corporate culture: a culture in which workers are no longer viewed as passive agents but where the men and groups at work, as well as the various professional categories, are considered not only as producers of goods and services but also of the culture to the extent that they support the culture put forward by the enterprise or resist it not only physically, as was the case in earlier confrontations, but also intellectually and emotionally.

2.6.2 Continuing training and the increase in the average age of the working population

For some years now European countries have been concerned about the ageing of the population, the number of retired persons and the amount of retirement pensions to be paid, the growth of the population and a deterioration in the ratio between those at work and those not at work. So far they do not seem to have been particularly concerned about the ageing of the working population which, however, will be one of the major challenges facing the most developed European countries up to the year 2015 or 2020. We can grasp the importance of this demographic trend when we compare the 25 to 44 year old age group with that of the 45 to 65 year old age group. This ratio is deteriorating constantly and the situation will rapidly become alarming. In fact, from the year 1990 up to 2015, or even 2020, the dwindling birth rate which has been evident since 1965 in many European countries will reduce the number of new entries on to the labour market.

In future, the rapid increase in the average age of the working population will drastically reduce the possibility of replacing older workers with young, more educated, more highly trained workers.

Enterprises will only be able to cope with this ageing if, from now on, they aim to tap the experience of workers and if they concentrate on developing the skills of their human resources by creating the conditions which will encourage the intelligence of men and women and work, which will sharpen their powers of observation, their creative capacity and which will encourage their commitment. Education and life-long training will become the key factors in that development.

2.7 SOME CRITICAL REMARKS

Whatever the factors at play, it is important to remember that organizational innovation can be introduced independent of all other factors. However, most frequently new forms of work organization are introduced in hand with innovation as a response to the dictates of the market and competition. Nowadays, changes in work organization are taking place rapidly. There is a growing number of enterprises or establishments which are constantly going through this process: these are called developmental and, thus, learning organizations, some would say.

Whether they be workshops, offices or laboratories, organizational structures are increasingly being designed to be reprogrammable and flexible, similar to what is expected in the construction of machines. They are, therefore, designed in a developmental manner in order to make them transformable and adaptable. This was, more over, the case in the enterprises oriented towards unit production or small series production. Under these conditions the acquisition and adaptation of occupational competences becomes an absolute essential within the enterprises. They can only be innovative by becoming learning environments. Competitiveness, productivity and profitability will be increasingly dependent on the individual collective competences of the operators and, by extension, on the ability of enterprises to stimulate, utilize and train them. In future, research and development efforts and training development effort must go hand in hand. New performances demand more finely tuned pairing of the competences of research staff and operators.

Today there can be no innovation or accumulation of capital without moving via forms of qualification/dequalification of workers, without training and new qualifications, without new know-how and occupational competences, without upgrading new trades, without new designations and classifications and without new forms of occupational identity. However, at the same time, one cannot avoid the dequalification of some workers nor their downgrading, even the disappearance of trades and occupations even if, in the long-term, developments are moving more along the lines of a global increase in qualification.

Under these conditions, opportunities for profitability and accumulation of capital will be whittled away unless coupled with a sufficient degree of flexibility and adaptability not only of the means of production but also of human resources. This implies the mobilization of ingenuity, creativity and inventiveness of man and, initially, a deregulation of the traditional work processes which will permit the emergence of new processes more in line with a complex environment and with the organizational system and work.

2.7.1 Ambiguities and contradictions encountered in practice

In reality enterprises are moving further away from one or the other of these principles which cannot always be easily combined. Thus, for example, observance of delivery deadlines cannot always be reconciled with the desire for total quality. In the same way, training time cannot be easily integrated into just-in-time procedures. Just-in-time also leads to the reintroduction of routines which go against efforts to achieve multi-skilling of operators or even total quality in products. Awareness of client expectations does not necessarily mean a healthy turnover. Production organized with a view to minimizing stocks can cause problems in respect of delivery times and supplies from the point of view of customers. Not all enterprises can function without stocks because this may mean under use of equipment and staff. Finally, these new modes of work organization, the goal of which is to encourage the involvement of the worker in work and in the enterprise, may be seen as new ways of exerting power and control and, therefore, as a source of additional stress. This stress is all the more apparent because the search for pro-active and qualitative flexibility cannot simply replace the threat of defensive flexibility which always has an effect on employment and salaries. This threat is all the more real because a large proportion of capital and enterprises are of foreign origin: the international mobility of capital has increased considerably in the course of the last few years.

2.7.2 Variability of models in connection with the macro-contextual variables

Finally, can one say that we are seeing the emergence of a new model of production and a new form of work organization which will be taken on board by all enterprises and all sectors of activity be they industrial or service oriented? Are we witnessing the birth of a transnational or even universal new model, if there ever has been one?

If we take as a basis the topology of R. Badham and J. Matthews (1989, pp. 194-216), then the answer to this question would obviously be no. A whole range of models and organizational forms are possible and will continue. In fact, there is no "one best way" or "best practice" which will end up being accepted by everyone. Neither on the European nor on the global stage should we expect convergence towards a unique organizational model or towards one exclusive form of rationality. The case studies, moreover, demonstrate the multiplicity of organizational forms adopted depending on the markets involved, the variety and variability of products, the differentiations in quality according to the reprogrammability of equipment and processes, the technical interdependencies between the occupations and the specialties required in production of composite products depending on the diversity of source of supply of raw materials or components etc. and thus the range of possible forms of work organization depending on the combination to be established from amongst these multiple factors or variables.

In reality there is no true Taylorist or Ford model, American or Japanese model, post-Taylorist or post-Ford organization of work towards which enterprises and economies could develop. Moreover, it would be difficult to identify the organizational principles which would be applied without any major change in a petro-chemical factory, in the automobile industry, in the production of machine tools conceived in line with specific uses, in a factory for manmade fibres or in clothing production.

The problem is even more complicated when service activities are included. The essence of reflection herei s based on industry. Examination of banks (F7, UK2, NL2, DK1, E2) shows that customer relations (or internal development of a service ethos) and increasing computerisation have a great effect on work organization and on the skills required and could justify use of a similar analysis grid.

All the same, awareness of this extreme diversity of situations and responses does not mean that in a specific sector or that on specific markets, given the global nature of competition or the slow adjustment of salaries and prices upwards within the European Community for example, that we cannot identify a certain convergence. Undoubtedly, given these conditions some enterprises may at least in the short-term react along the lines of quantitative flexibility and draw on neo Taylorist forms of work organization whereas other will orient themselves towards qualitative and positive flexibility aiming to achieve greater mobilization of competences and creativity of workers. These choices will have an effect on long-term developments and the survival of enterprises.

Even if the same situations lead to differing answers, an explanation can be found in a certain number of contingencies, specificities or idiosyncrasies which make up what we call national or regional culture and which can be found both in large and in small countries. By this we mean that organizational choices are not merely the result of factors linked to the internal environment in enterprises but also to their external environment.

Thus, in very concrete terms, choices in respect of work organization will depend on the traditional importance assigned to technical and vocational training vis B vis other kinds of training. Traditionally, Belgium, Italy, the Netherlands and France develop vocational training in schools whereas other countries such as Germany, Denmark and, to a lesser degree, the United Kingdom invest rather in in-company training and in close links with enterprises. Choices by enterprises in favour of new forms of work organization will not be linked to their commitment or their role in the organization of initial and continuing vocational training. This commitment generally tends to produce a more professional vision of work and thus leads to an affinity with the concepts and forms of more flexible and versatile work organization.

At the same time there is a need to examine the degree (and the timing) of this new approach in the various countries as well and the profiles and the history of certain public policies to identify the different approaches among companies: if, for example, one compares the Danish industrial case studies with the Spanish, the history of Denmark's opening to Europe as well as the importance for more than ten years of public promotion of changes in work organization has resulted in different paths. We shall return to this issue at the end of Chapter V with regard to training policies.

This brings us back to the problem of circular causality. Indeed, is this the form of training which influences the choice of organizational forms? Or do the forms of organization determine the choice of training? At all events, today, we have to note the development of alternance training and employment forms and partnerships between schools and enterprises. This development is certainly linked with the introduction of more flexible, extended and enhanced forms of work organization because, in the final instance, multi-skilling can best be learnt in the workshop, factory or office.

At all events, countries in which the development of school-based technical training is very limited, this is the case for example in Portugal and Spain, on-the-job learning does not necessarily promote the adoption of enhanced and extended forms of work. In fact, the weakness of vocational training often encourages the fragmented division of labour.

But it is not enough for training to be on-the-job for it to develop multi-skilling. Furthermore, even in cases in which training and learning in the enterprise can guarantee multi-skilling, this will not necessarily prove effective from the point of view of staff mobility. Everything depends on the character of training and apprenticeship provided but also on the forms of certification of training and learning contents. So far, this certification has been best organized in Germany, hence the possibility of counting on greater occupational independence and assigning greater responsibilities to staff. Hence the need to offer intellectual and salary stimulation to workers if an enterprise wishes to keep its human capital and to have a return on its investment in human capital. Hence, again, the move to adopt new forms of work organization and to the setting up of an internal labour market.

The adoption of these new forms of organization depends also on the abundance or shortage of qualified workers on the labour markets. The weakness of technical and vocational education will invariably lead to shortages of skilled staff on various levels. However, the highly professional and corporate management of training could produce the same effects and limit opportunities for recourse to new forms of work organization.

Viewed from a different angle, the ways in which governments and enterprises commit themselves to training depend, in turn, on the professional and parity based relations and the ideology of confrontation or cooperation between capital and labour, which characterizes the trade unions. In fact, the commitment of trade union representatives to the introduction and follow-up to new forms of work organization depends less on their strength than on their ideology. The new centrality acquired by the enterprise, employment and work throughout the long economic crisis, which most developed countries are passing through, have led the trade unions to seek participation and cooperation in forms of work organization for which they can assume responsibility.

Finally, as stressed by Hubert Landier (1991, pp. 44-45), to support the theory of a certain degree of convergence, we should not underestimate the role played by consultancy firms and various publications and works in the dissemination of new concepts for work organization, production and enterprise structure.

CHAPTER III – PRINCIPLES BEHIND THE NEW FORMS OF WORK ORGANIZATION: NEW KNOW-HOW, NEW COMPETENCES

The debate on the impact of organization change on knowledge required, acquired, transmitted or destroyed by and in organization is still open. The main theories in the 1970s concerning the process of the destruction of skills by automation and the development of Taylorism or, again, by the process of over qualification, have without doubt lost ground. Today there is a more optimistic vision: the combination of quality demands, just-in-time, the increasingly complex nature of management, the new spaces opened up by the withdrawal of the strictest Taylorist forms will lead to greater use of untapped skills and an opportunity for increased acquisition of know-how and skills in and through work. However, this observation is not fully shared. On the one hand it is probably not unilateral and dequalification "pockets" can continue and even spread. Furthermore, from one country to the next there may be varyingly optimistic interpretations. Thus, for example, the Spanish summary report develops a relatively pessimistic analysis stressing the importance of zones in which unskilled or semi-skilled forms of work will progress. This is clearly in contrast to the analyses of the German and Danish reports.

This chapter has a triple goal. First of all it aims to define a certain number of principles and to set out the limits to the problems of "newness" of know-how mobilized by and in organizational change. It then goes on to trace the major lines in work instigated by organizational change in the field of mobilized competences. Finally, it aims to discuss the limits to current change, the counter movements which may appear and the different situations which may exist from one country to another.

3.1 PEGGING OUT THE PROBLEM OF THE NEWNESS OF KNOW-HOW

Talking about new know-how raises very complex problems. It is important to know from what angle one is tackling the subject. What is newness referred to, to the know-how required in the old organization? to the know-how input by staff in this old organization? vis à vis the general area of know-how and skills? To whom are we referring newness: to those young or new recruits arriving in the enterprise? old staff? to some very specific groups? or in a more nebulous manner to everyone? Monographs can endeavour to find a partial answer to these questions by organizing different kinds of responses depending on the point of view adopted when talking about newness.

3.1.1 Recognition or development of know-how?

The first angle is that of the organization. When does the know-how [4] mobilized by organization really take on a new character?

a) We could first state that what we are witnessing is the emergence (or more exactly the recognition in the organization) of occupational know-how denied so far but nevertheless present: for example white-collar workers are being encouraged to adjust machines, something they had previously been banned from doing, but where the "informal" roles in the previous work organization already allowed them to do so. This offers an explanation for know-how which staff had had and had partially used. We would, therefore, suggest describing this as a process to identify internal know-how. The new element is the explicit tapping of existing know-how within the enterprise (of course partially) or attempts to formalize this know-how. F1 is a very good example of the first situation: confronted with the disappearance of typical craft know-how, the enterprise is endeavouring to reconstruct the paths for its transmission by drawing on a vigorous quality policy. We come across the same question in NL1, where the search for quality certification along the lines of ISO 9000 passes through a levelling and explanation of procedures which leads to the uncovering of existing tacit know-how.

---

[4] **To simplify this report we shall use the term "know-how" in the largest sense to mean all knowledge used, know-how, skills.**

b) A second related trend is towards mobilization by the organization of know-how which, up until then, had been considered as "non occupational", which staff had but which had been denied in the daily pursuit of their work. Mobilization of expression, reading or writing skills (e.g. to read the ranges, to fill in the quality control sheets, internal communication within the team) is to be found rather in this category. There is, therefore, recourse to skills developed most frequently outside the work situation (in the family, social context) which have to be mobilized and developed for professional reasons. This is not restricted to training aiming to reactivate or develop this know-how (expression classes, linguistic classes). This mobilization continues in work situations and provides, at the same time, opportunities for enrichment. We would, therefore, suggest describing this as a process of recognition of "external" know-how [5]. P2, borrowing on the experience of a French group, introduced a new organization based on autonomous groups aiming to achieve total quality and introduce just-in-time. The former assembly, semi-skilled, staff must be in a position to exchange and handle data (for quality control). We are, therefore, interested in basic knowledge (calculations, writing, languages) which will have to be used efficiently in day-to-day work. The training plan with schemes for these areas offers support for these reinforced demands for communication skills. Very similar situations (with and without training back-up) are to be found in DK2, B4 and F9.

c) A third aspect is the extension (by means of addition) of the range of occupational know-how linked above all to the growing variety of tasks. A first group of reasons focuses on multi-skilling (e.g. ability to drive several machines, perhaps in families of associated trades – lathe turning plus milling – or less closely related activities). A second, more complex group, is linked to functional desegregation: integration of maintenance tasks, quality control tasks. We would, therefore, suggest describing this process as an extension by way of addition or combination of know-how within the same occupational family or of know-how drawn from different registers (more abstract technological know-how – representation of the machine – managerial skills). However, at the same time, it is clear that this process is not simply additive as soon as it transforms the very substance of this know-how and the characteristics which it contains. The clearest case is that of DK3 which the multi-skilling process, moving beyond the sole function of manufacturing, leads to the construction of collective skills in respect of product innovation.

---

[5] **In the sense that, basically, these are more general "social" skills than the preceding ones.**

Pushed to the extreme, it necessitates the organization and hierarchization of know-how such as those provided by the school system. Thus, the gradual dismantling of border line between trades or categories may create tension when the training system (and social relations) are based on this kind of division. This is probably one way of interpreting the limits to multi-skilling encountered in UK1. In the same way, to come back to DK3, the subtle balance between the skilled and unskilled (based on two types of trade unionism, two types of links to training and two different types of career prospects) cannot be maintained if backed by permanent adjustment in the training area.

This construction of new combinations of know-how, moving away from school reference points and divisions is not a matter of course, particularly in countries in which these divisions are highly structured. Thus, F8 intends to train its mechanics around its product: mechanical, kinetic and acoustic concepts are combined in order to guarantee global understanding of the product's qualities. If the system is oriented towards school reference points (borrowed from several CAP [6]), this restructuring of training products on a product basis is, at the same time, challenging of the trade structure which is the dominant factor in the reference points in question.

d) Finally, a last element is the extension by calling for/creating new know-how either because the register of desired knowledge differs fundamentally from the previously register (e.g. in the case of a technological leap forward in respect of the product or process) or because this new combination is, in itself, likely to bring with it and create new know-how. This could be described as a process to create know-how in order to stress that in this restructuring, the enterprise does not limit itself to simple acquisition or to the taking up of external know-how but that it is in some way the source of new know-how (internal or more transversal) or offers support for its introduction or dissemination, for example in a local area. This is the case with some state-of-the-art industries (F5, E3). But there is a similar situation when developing new techniques for typesetting and printing with E5 which then leads to the creation of a regional training college.

3.1.2 Segmentation, destruction and redistribution

Let us now focus on the dual aspect of the individuals concerned and the processes of fragmentation/redistribution of this new know-how. It seems quite clear that the "newness" will not be the same, nor will it produce the same effects in a different category of staff. Some monographs stress the fact that for older (or for less well trained) staff, newness is more radical and less easy to accept (either because the acquisition of new knowledge is made more difficult because staff do not have the necessary basic knowledge or because "de-learning" is necessary to break with past routines). By contrast, for young people or more highly skilled staff "newness" is not really newness when it is coupled, for example, with know-how freshly acquired in the school system.

---

[6] CAP – certificat d'aptitude professionnelle (certificate of vocational aptitude)

The above classification, may be applicable to the organization or the group concerned, but not necessarily to the individuals or the sub-groups which make it up.
Furthermore, we have to avoid any idea of stocktaking which enable us to make any definitive statements about the question of a rise or fall in the level of knowledge. It is difficult to make any statement of that kind within the limited framework observed: any process leading to the emergence of new know-how is at the same time a process which destroys or downgrades other know-how. We can see this for example in the case of the Spanish bakery (E1) where craft skills are disappearing but also in the diverse situations of automation where the growing distance to the product implies the relative declassification of skills linked to direct handling (without however, it should be stressed, eliminating the absolute necessity for this intimate knowledge) cf. B2, F4 for example.

Viewed more globally, the organizational changes taking place are changes in the technical and social division of labour: between functional and operational services, between the components in a networked organization. Concentration of new qualifications around one pole of the new organization may go hand in hand with the restructuring of unskilled or semi-skilled work or with a reduction in the "skilled core" (e.g. drop in maintenance staff). One example is the Spanish printing house (E5) where the construction of a networked structure led to changes in skills in the parent enterprise (with polarization of some highly skilled tasks), the delegation of unskilled work to some sub-contractors and to the emergence of specialized sub-contractors based on the creation of small enterprises by the highly skilled workers of the parent enterprise.

Finally, it is clear that some unskilled or semi skilled tasks disappear; they may be partially absorbed into this process of the redivision of labour, into restructured posts which bring together skilled tasks, skill generating tasks and semi-skilled tasks which may even be seen as dequalifying by those who are to assume them (example of direct computer input in a bank in UK2, F7, P1, cleaning activities in industry).

Within the framework of this report it is, therefore, not possible to make any statements about a general trend towards a raising or lowering of the level of competences required nor about a trend towards polarization. However, we can put forward the idea that for most of the cases studied, which were chosen because of the marked character of organizational innovation which they have experienced, there was a clear trend for the hard core of staff concerned towards an increased desire for extended competences in line with very different situations. In other words, it can be said that the competences of staff are becoming a key feature in current organizational change. This brings us, more directly than was the case before, to examine and reflect on the organization and how it reacts to this demand.

The problem is less that of the balance between positive or negative movements but rather that of dynamic analysis of the way in which the enterprise (organization) develops competences via continuing training, apprenticeship, and by and in the organization. It is a matter of understanding where the borders are between these three aspects and what the implications are both in terms of training policy and of the career prospects of those interested and the functioning of the labour market.

3.2 MAIN LINES IN ORGANIZATIONAL RESTRUCTURING, LINKS TO THE DYNAMICS OF KNOW-HOW AND SKILLS

We will outline here the main lines in the links between organizational change and dynamic know-how. We shall not focus at this stage on the ways of transforming competences (explicit, discreet continuing training, direct recruitment) which will be dealt with in the following chapters.

3.2.1 Productive flexibility and operational multi-skilling: the economy of diversity

Flexible production systems are often based on reprogrammable machine systems designed to produce a differentiated range of products for volatile markets. They make necessary a extensive reorganization of work. In these new forms of work organization operators become multi-skilled. They have to be able to carry out all the tasks integrated into coherent systems and which cover all workposts and machines. In the course of a working day the employees move from one post to another and from one machine to another depending on necessities arising during the work. It is not just the products which are being manufactured which move from workpost to workpost but also the employees. These are some of the characteristics of a flexible workforce. It is normally trained on-the-job by means of job rotation, the sequence of which is not predetermined.

These new forms of organization bring them with them a certain number of advantages. In fact, the coherent system of posts can, under these conditions, be used by a lower number of workers than the number of posts available. Under these conditions a smaller workforce accomplishes more work. At the same time, the alienation provoked by carrying out monotonous work is reduced considerable. Staff learn to organize their work themselves and to keep an eye on the quality they are producing. This reduces both the costs of absenteeism but also of surveillance and rejects. This does not mean that these new forms of work organization are not problematic and do not induce stress for those concerned. We shall come back to this later.

The word used most often to designate the competence desired is multi-skilling. Given the polysemous character of this term we should focus briefly on the diverse development forms of this multi-skilling in our case studies. The perception of this or these multi-skillings vary considerably depending on staff, their relationship to their trade, their form of organization (trade union, enterprise union).

In its most elementary form, this simply means permitting rotation within a team, or between teams on similar posts. The know-how tapped is, therefore, unchanged. However, what is required is a capacity for adjustment to change (sometimes on several occasions during the day) in a workpost which itself has been changed little and is not developmental. We shall relate to this situation another situation which involves extending tasks by assuming responsibility for various simple sequences (or all sequences) when assembling a product. Thus, there is enrichment at the expense of segregation and repetition but the training content is limited. Situations of this kind are to be found in B5, for the "filling" section B1, E9, for the automated section of mass production E12.

An extended form of multi-skilling is rotation through a family of posts calling on associated or more distant skills. The typical case is, for example, rotation within a team on various machines for metal processing (milling, lathe turning, boring) which may, furthermore, be conventional machines or numerically controlled machine tools, cf. F2, F3, F9, P3. Another example can be found in continuous processes, in the alternation of phases in the control room with phases in the installation room (F4). In these situations the process of knowledge enhancement (processes to extend this to associated know-how) is very clear, to the point that operators sometime lose touch with their original occupation.

Generally speaking, multi-skilling must also be seen in terms of measuring the length of the product series. In several cases, the switch from mass production by means of large series over relatively long periods to small batch production over shorter periods in the course of a day leads to a rapid change in tools, to adjustment to various ranges of manufacturing or assembly, even if the member of staff continues to be attached to one workpost. There is certain to be increased complexity in tasks. B4, where the variety of products manufactured is large and the series very short, is very representative of this development, even if there is still physical attachment to a workplace. F8 combines the same trends with rotation around all posts in a workshop.

3.2.2 Functional redivision: multi-functionality

A second axis of change is linked to the extension of tasks by reducing functional borders. This case is to be found, for example, in the trend which involves integrating first or second level maintenance tasks into manufacturing, the shift and progressive integration of methodological and scheduling functions to manufacturing, supplies or management or in the other direction with attempts to reduce the segregation between research and development activities and manufacturing (P3, DK3). This is, therefore, a process of development of the substance of know-how by incorporating know-how from different registers. The same trend can be identified in jobs which interface with customers (development of the direct commercial function for bank employees, cf. UK2). We will, therefore, use the term multi-functionality to describe the extension of know-how to associated trades or to trades which are members of different families or functions. In this case the need for extended learning is felt either by drawing on formal training or by more informal paths. But we do see signs of these function shifts, for example in the case of F5 where the development of scheduling trades takes place via a change in technical tools (computerization) and by the establishment of new links to manufacturing.

3.2.3 De-prescription and constraints of just-in-time: increase in managerial know-how

This movement cannot be separated from multi-skilling or multi-functionality forms described above; it acts on various levels. On the one hand, it is a question of integrating into the workplace (or into the team activity) the constraints of technical management of the production process or one of the segments of this process: by liaising with less direct prescription we then assign to the individual or the group responsibility for the management of his/its time, the choice in sequencing of activities.

Furthermore although the material organization of Kan Ban is very simple, it is a question of integrating the handling of trolleys, sheets. Sometimes the relations with the supplier are very direct (order received by fax in the workshop). All this mobilizes part of the organization, the management of a machine fleet, a stock of parts or a fleet of parts. And this all the more so because some related services will disappear: in F8, for example, cutting tools are now managed in a decentralized manner, closer to the workshops, direct interaction between a workshop technician and the different groups of workers.

Finally, in a far more limited manner, this is a partial return to economic constraints: physical economic optimization, for example by looking to savings in materials, energy or by holding the group responsible for the consequences of non-quality. In this case in addition to the classical, physical indicators of production, the unit has "economic" indicators (and is governed by these indicators). In some cases this is a movement towards a tightening of the prescription of the results which translate or reflect very well the contradictory character of the shift (relaxing upstreaming, tightening downstream) of the system of prescribed work. However, there is a major difference when we are dealing with true prescription of results, leaving open the operational and organizational choices and when, often, this movement is accompanied by a reduction in the hierarchical line and the disappearance of front line supervision. The case studies demonstrate the growing desire for reading skills, interpretation skills (and more rarely production skills) of complex information which make the individual or group adopt a "managerial" stance in respect of his/its time, sequencing of activities, machine tools and the different resources used. This aspect is often viewed as a major enhancement even if it brings with it increased tension.

3.2.4 Quality

From the organizational point of view, new forms of work are part of the search for total quality, not only of the product but also of information, organization of work and the enterprise. For this a whole series of indicators have to be oriented towards the zero limit. This concerns both stocks and errors in information and transmission, breakdowns, wrong manoeuvres, mistakes, rejects, down time, accidents, delivery times, absence, strikes and also, of course, loss of customers. The know-how mobilized in this field also includes that linked to "quality control" (metrology, statistics) but also perhaps the potential analysis of the source of faults, a potential which implies a very good understanding of the overall production process. In some cases the most elementary form is partial or total integration of quality control into production tasks (this is a further dimension to the enhancement of tasks and multi-skilling) or even the rotation of production workers towards quality control and vice versa (F8, F3). But this does not necessarily lead to tasks for diagnosing non-quality. By contrast, in some cases we come across formulae which guarantee the direct involvement of staff in the production of this on-going self diagnosis.

Flexible management of quality production, undertaken in the agreed time, on the basis of reduced stocks upstream and maximum use of machines can only be obtained if the workers and the groups are convinced of the need to be and remain competitive and of the need to pursue the objective of total quality preached by the organization. Thus, we can understand the importance with respect to the concept of quality of the concepts of the project and culture of the enterprise.

3.2.5 Economy of system: group work, networks, information and communication

Another dimension to change has to do with systemic optimization in and around the other two dimensions. The first which is linked amongst other things to the tandem multiskilling/de-prescription implies a clearer collective functioning of work teams with formalization of internal communication. The second moves beyond the boundaries of the group: here it is a question of directly linking up the different groups under the constraint of systemic optimization which makes each stage of the production process more dependent on the others, particularly as the movement is often backed by transversal managerial and communicational supports (e.g. computerized regulation in the process, computerized management in the bank, computerized tools in the case of production scheduling, with direct communication of data upstream and downstream). This, therefore, calls for some of the classic communicational skills, which may have been denied before (oral expression, written communication) and communicational skills constructed around the common communication tool (FRG3, NL2, F5 and F6).

This may move far beyond the boundaries of the enterprise and reach all suppliers and sub-contractors of information, components and basic materials. These sub-contracting networks are extending furthermore to a whole spectrum of services for marketing but also for production services and services to enterprises which, furthermore, are becoming one of the tertiary sectors which are the driving forces behind modern economies. Hence the introduction of policies aiming to create integrated circuits of information between the enterprise, its suppliers and sub-contractors, downstream with commercial chains. This explains the efforts to guarantee the reliability of information networks and beyond that the reliability of supply and distribution networks necessary to the functioning and viability of the enterprise. But here, too, this reliability moves via the common construction of reference points for knowledge, by the construction of a set of communication codes, which are transversal this time to various entities. Cooperation in the joint training of staff in the various units concerned, a system for the exchange of staff, who are also a vehicle for circulating know-how and skills, will be two solutions used (E5, DK3).

3.3 THE RESTRUCTURING OF KNOW-HOW: THE TANDEM PRODUCT/ MARKET OR THE "MARKETABLE PRODUCT"? KNOW-HOW OR ATTITUDES?

3.3.1 The "marketable product"

The five dimensions analyzed above outline the contours of the different kinds of know-how mobilized, constructed, reconstructed in the wake of organizational change. We should remember, but will come back to this later, that the intensity of development varies considerably from one enterprise to another depending on the "societal" configuration on which it is based and in which it takes place. It should be stressed that, linked to this variable intensity, there is no concurrence or equality of each of its dimensions. By way of hypothesis one could say that only those organizations which enable the acquisition/mobilization of all four dimensions can be considered as learning environments in the full sense of the term since (a) they provide the leitmotif in the fundamental principles of the Taylorist division of labour, (b) they facilitate a restructuring which brings with it profound changes in individuality without drawing on the principle of separating the fields of know-how and attitudes, (c) they support, in this way, opportunities for individual and collective "life-long" self-learning.

The implementation of these principles not only involves a "juxtaposition" of new know-how but also a more in-depth recombination which brings with it changes in the traditional divisions which mark out this field: divisions in trades, "academic" divisions, divisions between production and management. This recombination may be structured around the tandem which suffers from perpetual tension: product/market.

On the one hand we see scheduling of occupational and technical know-how around the product which becomes the generic unit which brings together, in terms of results, the various components of knowledge. There are many examples in the case studies of this trend which is more or less completed. In the less elaborate version it is simply a question of repositioning the job "part" or the isolated act within the overall co-ordinated sequences of a product (the carrier of a set of technical characteristics): knowledge of the product, visits to other services in the enterprise, positioning vis à vis competitors' products are also ways of achieving this goal.

However, refocusing knowledge around the overall product could only be the consequence of rediscovering cooperation at work, expressed more clearly as an organizational principle whereas forms of past division, whilst putting forward requirements in terms of cooperation given the division of labour, denied this as an explicit principle since it was assumed on other levels. In fact, we have to go somewhat further and reflect on this repositioning around the "marketable product". In fact this restructuring around the product "technical object" is often part of its marketable dimension (quality, cost, more or less direct relation to the client). Thus in a more advanced form focusing on the "marketable product" also focuses on the question of quality, which not only takes in technical dimensions (zero faults) but also, more or less, the economic dimensions (zero return to supplier, just-in-time for clients).

Intimate knowledge of the product (in terms of its use value, but also in its circulation) is also at the heart of the steps to transfer know-how. Taken a little further, the product serves as a pretext for transferring more generic knowledge which is based or rebased around its specific features. This question is probably the most delicate one today. The example of the banks, where staff have to cope at the same time with the technical system (informatics), with a large of range of products and with customer relations, is probably the most revealing. Here we can clearly see the progressive shift in competences required which move from mastery of a workpost to that of the overall products and to handling commercial relations with varyingly contradictory options between the privileges assigned to the product or the client, a problem which we can find in a similar form in B6 and F7. But we also find this concern, for example, in F2 when the consequences of non-quality vis B vis clients leads to discussion of the staff directly concerned in the cost of this non-quality. In the same way in DK3, the collective involvement of staff in the design of new products has both a technical and commercial dimension. More obvious in services where there is a direct relationship to the client, this trend is also emerging in industry where the shift from commercial to production is more advanced.

3.3.2 Know-how, skills and new salary attitudes

So far we have touched on the question of new "know-how" as some kind of knowledge stocks independent of those who have them. For some years now sociological literature has returned to the concept of "occupational socialization" in order to stress the interwoven nature of knowledge held by individuals, with their way of living, their working life, their integration into groups. The way in which the individual structures his relationship to work, the enterprise, his occupational projects and the way in which he is shaped by his family environment, schooling, employment, are two sides to the same problem. As soon as they stress the necessary individual and collective involvement around a common goal, as soon as they upset the former divisions of the trade or category, as soon as they transform the conditions of hierarchical control, the new organizations have a profound effect on the occupational identity of the staff involved. In some ways it could be said that they call on staff to integrate as closely as possible the objectives which have been set (without necessarily allowing them to participate in the definition of these objectives).

These new organizations are, furthermore, potentially more sensitive to the consequences of a lack of qualification or attitude of refusal: costly equipment poorly used or poorly monitored very quickly leads to considerable rejects and losses. The partial blockage of production under just-in-time constraints does not have the same consequences as in the case of buffer stocks. The effort is, therefore, focused on knowledge (in the classical sense of know-how and skills) and on the attitude of staff to work, their behaviour within and vis à vis the enterprise, on the multiple facets which make up their occupational socialization. The quest for their maximum involvement in organization by paths other than production rates and job control or that of former paternalist policies, becomes a decisive element in policies for human resources management.

In some cases demographic renewal, possibly accelerated by policies of early retirement and replacement is one way of achieving this goal (E13, NL1) by recruiting not only better trained staff but those who do not have the old attitudes. In other cases the accent is placed on the "corporate culture" either by means of training to this end or in a more discreet manner via the various forms of active involvement such as project groups, quality circles, problem solving groups. In the cases studied which correspond to countries in which integration into the enterprise is undertaken via apprenticeship (FRG, DK), this concern is less apparent than in those countries in which the system is mainly school-based. In the same way, the greater the rupture with immediate hierarchical control, the greater the quality safety constraints (in the chemical and pharmaceutical industries), of just-in-time, the more there will be a stressing of the need for this "cultural" change.

3.4 DISTANCING: NECESSARY CONDITIONS FOR THE TRAINING CONTENT OF NEW ORGANIZATIONS, TRENDS AND COUNTER-TRENDS

The study of the scale and dynamism of organizational innovation and its training content reveals the diversity of these situations, which bring with them varying degrees of opportunity and openness. Amongst the conditions most conducive to the training impact of work organization, we can identify some invariables, on the one hand by taking a strictly "internal" view of organization and, on the other, by extending the debate on

51

integration into the organization to its external environment (even if this juxtaposition is very limited once the organization shapes its environment and is shaped by its environment).

3.4.1 Internal conditions

a) The question of the relationship to time and forms of time control.

Distancing from the immediate work task can only develop fully when, either implicitly or explicitly, control of time allows for this possibility. Situations can then be juxtaposed in which despite an extensive restructuring of work, the old forms, perhaps in a weakened form, of time control remain (B3, UK1, F9, E8, E12). This leads to difficulties in organizing formalized training (sometimes outside working hours). Furthermore, informal training is not implicitly recognized as a component of work time which can considerably limit its influence.

b) Prescription and autonomy

In the same way, the degree of task or workplace prescription is also significant. It is not a question of saying that no form of prescription may exist. However, there is a considerable difference between the maintaining of extensive prescription (even restructured around the workplace and, even more so, the basic tasks) and a prescription of results.

Linked to this problem is that of the position of front line management: without developments in a hierarchical structure and without consideration of changing hierarchical attitudes, there will be many conflicts and reminder will continue to play a major role. Destabilized in their command and direct control functions, perhaps stripped of a certain degree of know-how which they today have to share, supervisors react negatively, dragging their feet so as not to participate in training activities, defending a function based on direct prescription. By contrast, in situations in which the attitudes of supervisors are designed from the outset in relation to the training content of the new organization, developments are far more positive.

One can even take this analysis and theory further. In some case studies the concept of new organization is closely linked to the future protagonists. Definition of work organization, the putting together of teams, is also undertaken via training activities: progressive elaboration of trade sheets, collective definition of roles within the team, elaboration of protocols for machine utilization .... cf. F4, NL1, DK2 and DK3. In these situations, learning during the process of change is probably the most open kind. The organization produces and pools knowledge about itself which it will probably be in a position to enrich and transform.

c) The temporal nature of learning

There are several comments which stress that the problem of efficacy of training is not the same at all times when it intervenes in the organizational dynamics. We can identify two extreme and problematical situations. The first is where training is very much ahead of the envisaged changes. On the one hand, the gap between training and the situation of change is thus very wide and the value of some training schemes is often challenged a posteriori. On the other hand, after training, the staff return for a more or less long period of time to an unchanged situation. This leads to unfulfilled expectations and does not permit the immediate use of the newly acquired know-how (cf. DK2). The second, by contrast, is that of change envisaged without any consideration of training in line with the classic approach "the human resources will adapt". At best, in the case of "socio-technical" approaches, there is provision for ergonomic components but in a deductive (integration of human problems into the technical project) and non-repetitive manner. "Emergency" training, be it formalized or not, is thus mobilized to cope with malfunctionings which suddenly occur. Of course, these crisis situations have a high training value. But emergency treatment, in a context of doubts about the new organization which is often imposed, does not enable the best results to be achieved in respect of the didactic approach selected.

d) Tension arising from the sharing of know-how and hierarchical and functional repositioning

At the beginning of this report we stressed the uncertainty in the conclusions on this point given the lack of observations over a period of time. Several case studies do, however, clearly identify a process of routine which gradually weakens the training character of initial change. Since the conditions described above are not all given, we must add the lack of inclusion of categories or groups, structured within the old organization, which are more or less destabilized by change and which in the classical structure of defence, regain their positions, and exert a debilitating effect of reminder or hysteresis.

We are familiar with the classic situation of regulators, who lose some of their power with the attempts to transfer adjustment tasks to operators and who, on the occasion of serious malfunctionings, gradually reassume these tasks in order to guarantee immediate production. In many cases the same analysis can be developed for supervisory or for some functional services.

A second set of examples can be found in the new divisions and segregation introduced into autonomous groups which, as they gradually evolve, go against multi-skilling or create new barriers to knowledge of the product. We gradually see moves to reconquer territory, limiting the circulation of know-how.

What the French summary report describes as the privatization of know-how in the most restricted sense of the term is thus a major obstacle to dynamic learning. We can see how much this French question is linked to that of occupational prospects. Wherever the goal (often not explicit) is to reduce one professional category without offering alternative solutions, resistance quickly emerges.

e) Acceptance of the "event" [7]

This is no longer a question of the routine development, or not, of situations prompted by organizational change. More broadly, the question is the use or not of the event (that is the unexpected, even the unacceptable with respect to technical managerial criteria) as an opportunity for on-going enhancement. Once the goal is the mythical search for an organization free of malfunctioning or rather when malfunctioning is uniquely perceived as something negative, its treatment will not be possible by the group as a whole and will not offer any support to dynamic learning. Coping with the uncertain or the unknown, as part of a learning process, must be integrated in terms of dynamism into a looping effect. It is not just a question of eliminating malfunctioning but to make use of it in order to enrich collective knowledge. Now, and this is closely linked to the problem of time control mentioned above, there is constant tension, particularly within the framework of just-in-time, between the need to limit as much as possible non-productive time and that of using this as a training situation. Depending on the answer given to this contradiction, the space for learning will be larger or smaller and more or less stable in time.

---

[7] **Term borrowed from P.H. Zarifian, 1992.**

3.4.2 "External" conditions

We have stressed above a certain number of conditions which are more or less conducive to the development of new organizational forms and their training dimensions by focusing on the "internal" aspect in the enterprise. We now have to move more towards the external conditions whilst bearing in mind that this division, which is useful for our study, is at the same time highly artificial: the borders between internal and external are porous. They are constantly reshaping. The internal and external effects influence each other and shape each other in a process of permanent interaction. At this stage we shall restrict ourselves to stressing two of the most important external conditions. The conditions which have to do more specifically with educational policies or work relations will be addressed in Chapter VI.

a) Signs of incentive policies

Public incentive policies have, in a certain number of cases, contributed to a certain extent to identifying or prompting change. Their existence, their ability to bring together aspects of organization or training, to integrate the formal and informal dimensions of training clearly play a role and this, even more strongly, when the national tradition for the involvement of enterprises in training is underdeveloped. This effect can be seen most clearly in Denmark, France or even in the United Kingdom by way of the NVQ.

b) Density and dynamics of networks and networking

In all cases in which developments were most advanced, the question of territorial networking (in terms of labour market, links to other enterprises, training apparatus) emerges most strongly. This is not simply a matter of qualification or training provision but, more fundamentally, of the opportunity for new organizations to use all the initial qualities of their environment, whilst at the same time reshaping that environment. The density of the training fabric, the possibility of establishing relations with all agents in the territory (general public, trade unions, other enterprises) are indeed the external conditions conducive to new dynamics. Examples of this can be found in the Danish, Spanish, French and Portuguese reports.

4. PART II

NEW FORMS OF WORK ORGANIZATION AND TRAINING

INCREASE AND SHIFTS IN TRAINING EFFORTS

In all the enterprises studied there has been a growth in training activities and budgets in three kinds of training or apprenticeship. The first is on recruitment, when it is a matter of equipping the worker with specific know-how, practical skills and social skills. The second when it is a matter of adapting know-how and competences of operators or groups to technological or organizational change. The third is involved in the case of change or promotion.

There are several reasons for this growth in apprenticeship and training: first the search for new economic performance as a response to stiffer competition and accelerated technological change. It also stems in part from a desire of the enterprise to give itself a brand image, to create consensus around the enterprise project or change or to subject the individual to the enterprise philosophy, to the constraints of the market or the environment.

However, although there is a general increase in vocational training in enterprises, there are still considerable differences between countries, regions or enterprises, more particularly in the links between initial and continuing vocational training, internal training and external training, between technical and general training and between formal and discreet training.

In-company vocational training is an essential feature in the development of industrial or service activities. But this does not stop new forms of work organization from being viewed with mixed feelings. In fact, they often lead to the destruction of jobs, they downgrade some or all know-how and skills and lead to the disappearance of qualification even if they do restructure large areas of competences and even if they do lead to the emergence of other occupations and denominations, thereby shaking up classifications and occupational identities.

The first section of this report addressed developments in the organization of enterprises, an analysis of the principles used within the units or enterprises and a study of the qualifications and new skills of workers involved in the broad spectrum or new forms of work organization and production. Rather than talking about new skills it would be better to talk about new know-how and competences. In fact, according to the experts, the skills are linked more to the workplace, an occupation or a profession relatively strictly defined whereas the new, more fluid, organizations are oriented more towards the multi-skills of operators. As the new organizations develop in a networked and multi-cellular fashion, i.e. groups of multi-skilled workers and interconnected functional networks, both internally and externally, the objective be it in recruitment, training or apprenticeship of operators is to search out and promote the diversification of knowledge and competences.

Undoubtedly all changes in work organization are not equally skill generating. Thus the horizontal extension and vertical enhancement of tasks characteristic of sectors based on mass production are possible without necessarily having a major effect on the levels of competence or on training or apprenticeship needs. Moreover, even in cases when new skills have been observed, it can be said that there are very few cases in which it is possible to identify the situation of employment and skills at the beginning of organizational change. Furthermore, the increase in competences is often only possible by way of the statements of workers or personnel managers. These unarticulated facts do not, however, mean that in many cases the new forms of work organization and enterprise do not have (or have not had) learning effects be they desired or undesired, on-going or not. The new organizations develop know-how and competences. They want to be learning, experimental, discussion-oriented and innovative environments and always focus more attention on learning and self-training. They organize or finance several training schemes.

Chapters IV and V will analyze implicit and explicit training, formal or informal modes for the transmission of information, know-how and competences as well as interdependencies between these forms of training and other modes because the development of know-how, practical skills and competences of workers is always the result of combinations of formal and informal processes of learning and training, sometimes within and sometimes outside the enterprise.

Many competences can only be acquired within the enterprise, via work and via the learning processed incorporated in work. In Chapter IV an attempt will be made to identify, by way of formal competences and know-how and by way of formal and official channels for their transmission and acquisition, the tacit know-how and discreet competences which sprout in the wake of new forms of organization. Against this background we shall identify the informal and implicit mechanisms or modes for the transmission and acquisition of know-how and practical skills.

From the point of view of the enterprise it is very important to identify the individual and collective competences generated and accumulated by work and the work environment, sometimes without its knowledge, at least if it wishes to formalize these or promote their transmission. In this chapter we shall identify the processes for formalizing practical skills, for their transmission and learning, but this formalization is not always possible particularly if it is not anchored necessarily in already existing theoretical knowledge. They can be transmitted, however, in practice by doubling up and by processes for collecting information and imitation. In reality the discreet forms of training, learning and skill development through work and by means of situations and relationships to work are on the increase. They are essential for the acquisition or the transformation of various competences.

So far, little has been said about the formal discreet, tacit or even clandestine nature of know-how and skills, or about their genesis and make up and, therefore, about the processes for their development, circulation and dissemination. This discreet knowledge and these discreet competences may be conducive or detrimental to the enterprise, its goals and results.

However, if we want to identify discreet know-how and competences of workers, we have to distinguish between recognized skills, which are part of prescribed work, and those implicit in real work. We also have to identify the gaps between the skills required by the employer when recruiting a worker or even when about to assign him a post or a group of tasks and those truly mobilized at work or, in parallel, situations which move beyond the skills required and which, for example can be identified by means of a competences audit. This can promote their implementation by the enterprise. Finally, we should make a distinction between the know-how and competences recognized and, more or less, rewarded financially by the enterprise and those which it refuses to recognize or even suppresses. This may be the case for representation or negotiation skills oriented towards workers for example.

In Chapter V we will concentrate on the efforts and problems related to training which is officially produced or desired by enterprises or workers even if, inevitably, this is combined with discreet forms for the transmission of know-how and the experimental acquisition of competences.

The following table gives in brief form the developments which will be addressed in this chapter and in Chapter V. Official training and formalized learning are described as "explicit". The others, described as implicit, are those which have not been selected or programmed by the organization. In the same way formal knowledge which is recognized and rewarded by the enterprise is set against discreet knowledge.

CLASSIFICATION OF KNOWLEDGE AND MODES OF TRANSMISSION

	Informal modes of transmission	**Formal modes of transmission**
Discreet knowledge	Chapter IV	Chapter IV
Explicit knowledge	Chapter IV	Chapter V

CHAPTER IV – DISCREET KNOWLEDGE, DISCREET TRAINING

4.1 DISCREET KNOW-HOW AND PRACTICAL SKILLS: A TWO-EDGED SWORD IN THE ENTERPRISE

4.1.1 The sources of discreet know-how and practical skills

Any form of work just like any form of organization of production and enterprise, is a learning environment by means of which positive and negative experiences can be acquired. In the enterprise much know-how and many practical skills develop and accumulate in a discreet manner through the carrying out of tasks, the finding of solutions to breakdowns and day to day problems, by means of the decisions take on responsibilities assumed in isolation or together with others, the transmission or the receipt of internal or external information and through the tensions and conflicts which accompany the day to day operation but also the development of the enterprise. The work has a training impact also by means of the qualities and attitudes required of workers such as perseverance, punctuality, discipline, reliability, dedication and identification. In addition to production skills, work enables the assimilation of the working of a cooperative.

The development of work and the organization, contributes to rendering knowledge outdated, generates processes of de-learning but also (self) training and apprenticeship and thus the acquisition of new skills. In daily work, it is by no means rare for workers to do more than simply achieve what has been prescribed in terms of tasks or objectives. Every working situation generates discreet knowledge, even clandestine knowledge. This is knowledge which is only passed on to family and friends and which is hidden from those who monitor or observe workers.

Every work collective, every form of work organization (traditional or new) is accompanied by informal modes for the transmission of knowledge and the development of competences sometimes removed or even in opposition to the enterprise. Discreet, acceptable, dissident or deviating knowledge is generated which, from case to case, will prove to be conducive or detrimental to the goals of the organization. This explains in practice the inevitable gaps between prescribed work and concrete work, particularly between the required knowledge and those actually used by workers.

Be they individual or collective, know-how and practical skills which are discreet, complementary or opposed to those required by the enterprise, they are the result of various factors inherent in work situations but also in human nature because, as explained by DaniPle LINHART (1991, pp. 154-155), the skills required at work, contrary to chronobiology are the same at all hours of the day. Thus the worker looks for informal solutions. He seeks to give a new sense to his presence at work and to escape the dehumanizing influence of the scientific organization of work.

The gaps between prescribed and actual work widen when workers are at loggerheads with overly rigid organization and when they try to avoid the malfunctionings linked to the limits of formal organization. "Most of the practical and professional know-how of a secret nature", writes D. LINHART, "are only there to combat the short-comings or gaps in the system". It serves as "an antidote to the negative effects of work organizations still structured along Taylorist lines. It makes production possible despite the uncertain factors or the breakdowns which are unknown to the designers and for which consequently they have made no provision". "The creation of informal know-how and its mobilization is one form of self-defence and self-preservation in a particularly difficult environment". Along the same lines sociology shows how any organizational message generates various associated messages and counter messages. The informal learning processes, therefore, may be detrimental or conducive to the organization and to the individuals concerned. They supply them with the means to support that organization.

4.1.2 The social functions of discreet know-how

Informal competences, even those not recognized by the hierarchy or those responsible for the enterprise, are sources of upgrading the worker in his work group or his professional category. Placed in competition with others, he seeks to set himself apart by looking for ways of achieving superior performance. These competences help in the development of his identity and his professionalism. This is demonstrated in an excellent manner by the case of the enterprise manufacturing pumps and valves analyzed in the Danish report (DK3). The division of labour, even within work groups, is undertaken depending on the degree of difficulty of work to be undertaken and thus on the basis of the degree of professionalism attributed to each member of the group by the other members of that group.

In the same way, when a worker finds himself in contradiction or in opposition to his superiors he forcefully defends himself or negotiates, for example, by demonstrating that it is not enough to have a certificate in order to know what to do or to lead. The development of know-how, separate from formal organization, is thus one way of demonstrating "the superiority of practical skills over academic ones" and "to challenge the legitimacy of those who have higher status, higher salaries based on competences and know-how which prove to be unusable" (D. Linhart, 1991, pp. 160-164).

In the work environment people are taught how to run but also how to block machines. The discreet know-how is also a factor at play in the power struggle, in resistance to the introduction and the challenging of power within the enterprise. More generally, discreet knowledge is part of the construction/production of a set of rules which function and organize relationships within the group, the hierarchy and between groups.

4.1.3 Discreet know-how: a new challenge for the enterprise

For a long time and before the advent of F. Taylor, the existence of discreet know-how and skills was recognized. Far from being an obstacle, they can be an advantage in the functioning and development of the enterprise which, moreover, seeks to mobilize them which are all the more necessary as productional and organizational systems become more complex. The Japanese quality circles undoubtedly have no goals other than to mobilize and disseminate this tacit know-how and the latent competences of workers in order to benefit the enterprise. Today, some people believe that the performance of enterprises depends on the accumulation of this tacit know-how and these tacit skills.

A large part of the case studies testify to the importance attached to the processes of acquiring and transmitting tacit knowledge.

In the previous chapter we spoke of the idea of recognizing existing knowledge and skills which are not explicitly recognized in work organization. Here one passes from the first to the second line of the table on Page 48. At the same time the increase in the number of more or less sophisticated measures, operatives outside their field of work and their usual work role (quality or pilot circles, progress groups, initiative groups, project groups...) contribute to the process of recognition (and possible use by the enterprise) and led to a formalization of the apprenticeship processes which corresponds more to the second than the first line of the table (even though the training aims of these measures are not necessarily explicit).

While we shall return to this at the end of the chapter, we are forced to admit that it is the processes which link the different cases to which we should attach importance as the confront us with barriers and shifts in these rather than a typology which classifies certain knowledge of forms of acquisition.

It must also be recognised that the issues linked to these shifts are multiple.

a) in pedagogical terms certain forms of apprenticeship linked to work seem unfeasible in a more formalized form (the case, for example in the FRG) where the use of the system for the integrated transmission of data can scarcely be learned without concrete knowledge of what staff actually does with it. Other can be considered more efficient on account of the characteristics of the staff involved (see example of the choice in FRG2 of formalized training for a group of workers and more integrated training in the other case).

b) in terms of cost, the choice of work-integrated models can be explained by its lack of implications for the work process, the savings in full-time trainers.....

c) more fundamentally, it can be said that in certain processes for constituting or reconstituting work organisation, the production of new rules which tolerate this organisation and the relationships between the members should be based on a discreet training process, facilitating the production and common acceptance of these rules and, subsequently, their appropriation by new recruits.

This complex group of determining factors gives discreet knowledge and less formalized forms of transmitting knowledge, a renewed significance and will increase linkage to more explicit forms as we shall see in Chapter V.

4.2 THE MEANS OF LEARNING IN AND THROUGH WORK

At this point we shall proceed to making an inventory of various forms or learning which are more or less discreet and such as those found in the case studies, emphasizing trends on the borders between the discreet and the explicit.

4.2.1 Tutoring, learning by doing

The role of the apprentices master in initial training is well known and has a formal structure in the various countries. In the FRG the "Meister" who has a recognized training role is the symbol of tutoring which is explicitly recognized. In many of our case studies, the disappearance of apprenticeship goes hand in hand with the emergence of new forms of tutoring in both initial and continuing training. The situation has reversed today with the development of new forms of tutoring which consist of a more experienced worker tutoring an employee during work. Logically, this process is not divorced from that of letting the employee experiment in his work under the supervision of a more experienced worker.

Three very different examples illustrate this situation:

- in the company, F7, a tutor is appointed for each new recruit and for each worker undergoing training in order to be promoted. The tutor has the task of helping the worker in his new work place while preparing him/her for the practicals and examinations during the training course. The tutor is responsible for ensuring the acquisition on knowledge through work and also for self-training, knowledge which is considered to be necessary for entering training and which is tested prior to commencing training.

- in the company, RFA 3 the use of a networked computer system is prepared through superficial training. The trainers provides basic knowledge leaving more detailed issues aside. Through a process of trail and error the trainee learns, referring to the trainer when he encounters difficulties. The latter provides only the details necessary, if not asked then the system is being improperly or insufficiently used.

- in the company, B5 for stores and despatch a parallel organisation permits increased job experience of the storekeeper who over a period o 6 months learns the various aspects of the job. In this case the function of tutor is not explicit, contrary to the other two cases.

4.2.2 The simulation of working situations

This situation is akin to the previous one, the major difference being that the worker is not actually taking part in the work process but is in a school or workshop unit.

The first case is that of the company, DK2 where the creation of a new assembly procedure (in which the workers as a group are responsible for the whole assembly process). The group works on an experimental basis and is not subject to profit constraints. It is thus a twofold apprenticeship: collective learning by the group members of the new working principles and also the apprenticeship in the new work organisation which will be extended in stages to all assembly workers.

4.2.3 Primary groups and multi-skilling

Primary groups are set up on the basis of a work group. In the traditional form it is a team of workers from the same group without being autonomous. In a great many cases there is a trend towards autonomous groups, as we saw in Chapter II. In these situations where there is emphasis on multi-skilling within the group, the collective function of transmitting and acquiring skills is strong. This resembles the forms of tutoring seen earlier but in this context the tutoring is collective in nature (while not excluding individual tutoring).

- in the case of company FRG2 or UK1 such groups are set up in assembly work. These groups presuppose a minimum of collective organisation (possibly with the nomination of a group leader) and the ability to deal collectively with problems and malfunctions. The internal transmission of knowledge and skills can be organized and recognized in a systematic manner.

- in the case of company, F8, the multi-skilled groups allocate the tasks within the group and decide on allocation to machines. This presupposes a mastery of each task and each work place, which is organized through a system of doubling up and rotation. X is trained on a certain machine by Y who goes to another machine to get training from Z who himself goes to another machine. This also presupposes that time is set aside for organising the work, for daily decisions, for maintenance and correcting malfunctions and that this time is used for an extensive exchange between the workers. This is in fact collective self-training.

- in the case of company FRG2, team work was introduced in a very formal manner and included periods of training for management and for the workers involved. The launching phase is for each group a period of collective learning with the support of the training service. This is evaluated at the end of the none months.

4.2.4 Transversal groups and interfunctional relations

These groups are involved in different forms of functional elimination of barriers and in dealing with transversal problems (quality, for example). According to D. LINDHARDT (1993, pp. 63-74), they are less functional than primary groups in developing practical knowledge. On the other hand, J.P. DURAND (1993, p. 126) states that they are a means of unifying the various groups and of promoting cross-learning. They make the workers aware of the company as a total entity and of overall coordination as well as of the costs and sources of non quality. They stimulate the circulation of human resources and ideas over and above the organisational barriers between groups and services within the company. They promote the exchange of knowledge and skills which are input once again in the working group and in daily work, something which improves overall solidarity.

In the cases we studies frequent use was made of such groups, more of less for explicitly training goals.

The company F4 set up project groups to change the organisational structure. Here the training goal is not explicit. The opening represented by the existence of such groups has similar characteristics to organisational learning through extending the fields of activity of the workers. The company intends to remove the barriers between production and the studies office. Initially the company was in favour of direct contacts between operators and the studies office. This hierarchical short circuit caused problems. There was a return to communication mediated and organized by the hierarchy. This increased difficulties in communication as operators did not have the basic knowledge to formulate messages via an intermediary. This resulted in two supplementary methods – raising the level of basic training of the operators (through recruitment) and employing an engineer as an interface. This removal of barriers raised the problem of qualifications and of how removing barriers can enrich production knowledge.

4.2.5 Human resources

In contrast to the preceding cases where the issue is that of sharing collective knowledge by the largest possible number, in some respects a question of redistribution where the resulting total should be greater than the sum of the constituent parts, recourse of human resources is based on a type of specialisation, permitting a group to find a specialist conversant with the various issues.

The most important example and the most "informal" is that of the Danish bank, DK1. Each customer adviser is responsible for a number of portfolios but cannot know at the same time all the details of the individual accounts. The advisers are trained progressively in specialized areas though work experience, exchanging knowledge with colleagues and through explicit external training. Little by little within a team, each adviser maps out his own territory of specialization. This does not entitle the adviser to intrude on the customers of other advisers. Through mutual consultation and the circulation of accumulated knowledge their is a pooling of knowledge.

The company F8 is another example. The creation of a number of internal micro-companies resulted in a dramatic reduction of functional services (methods, cutting equipment, quality). In each new unit specialists technicians were placed close to the head of unit in order to help the operatives in their specialized fields. This support is organised with a learning goal, in order to train the operatives and provide knowledge of the various aspects of their specialization.

4.2.6 Self-training

Computer aided training, literature for studying at the work place or at home are another means of discreet learning. In the case of company, P3, computerized learning of numberic control was designed and learning oragnized for the workers during working time. In company, F8, each worker has a small booklet of specialized English and all the items used are referred to in English. In other cases there were more discreet forms of learning: in company F8 the breaks during working time aew used for reading technical notes, the disappearance of the machine adjuster was accompanyed by the appearance of booklets for each machine which operatives could consult.

4.3 FORMALIZATION OF LEARNING

The distinction between formal and informal training is not without relevance when it comes to evaluating training expenditure by enterprises. Generally speaking, expenditure on formal training is more easy to identify than that on informal training but the relevance of this separation becomes clear when it comes to analyzing the links between formal and discreet training or between theoretical and practical training. That is when psycho-educationalists have endeavoured to use an approach in which they make a one to one comparison of the characteristics of formal and informal training modes at play within enterprises.

This fine tuning of concepts should enable the identification of the way in which work and organization generates knowledge and competences and to classify those which cannot be acquired by one or the other of the informal or formal training channels. In fact, whether know-how and skills are recognized or not, validated and thus visible, whether knowledge or competences are discreet, they can be acquired by way of formal or informal processes.

DIDACTIC CHARACTERISTICS OF TRAINING *

INFORMAL TRAINING	FORMAL TRAINING
Activities integrated into everyday work	Activities separate from everyday work
The apprentice is responsible for acquiring theoretical and practical knowledge	The teacher is responsible for the transfer of knowledge and for the training and learning sequence
Personalized, individual learning undertaken by his/her colleagues	Collective and impersonal learning under the supervision of ad hoc masters
Few or no explicit programmes	Explicit didactics and programmes supplied outside the enterprise
Learning centred on coping with problems or breakdowns encountered at work	Learning prior to a break with customary or recurring tasks
Learning by observing, demonstrating and imitating in real situations	Learning by means of verbal exchange, questions, generic learning on simulators for example
Stimulating and motivating through accomplishment, by successful work	Stimulation and motivation through encouragement amongst trainees
Validation of knowledge and competences through the tasks assigned	Certification of knowledge and skills by an examination

* This table is adapted to that of Blandine Bril, in "Apprentissage et culture", D. Chevallier, Ed., Savoir faire et pouvoir transmettre. Editions de la maison des Sciences de l'homme, Paris, 1990, p. 20.

According to this table, informal training is characterized above all by the organizational structure designed to this end. Separate sites, times and lengths of training are envisaged and reserved exclusively for the transfer of knowledge. From case to case the formalization and institutionalization of training and learning will be more or less developed sometimes within, sometimes outside the enterprise.

Inversely this table shows that informal training is not necessarily based on a programme which organizes the sequences of induction in the various tasks. Training is undertaken rather when problems arise in work or production. Learning is not for a fixed period, it may move beyond the requirements or demands of programmes and organization and does not necessarily fit in to the enterprise situation. In order to be more efficient, this direct on-the-job learning requires phases for reflection and conceptualization which have to be envisaged and organized.

Despite its apparent logic, this typology and characterization of formal and informal training is misleading for two reasons. First of all because the two training approaches are often interlinked. This typology does not enable us to identify which knowledge and competences are to be acquired in a formal or informal manner and why? In reality the two kinds of training approaches are complementary, two sides of one and the same coin. There are many different combinations of these two approaches and they depend on the know-how and competences previously acquired by those concerned, on initial "continuing" training but also on the societal context. Depending on the country concerned ultimate training/employment and cooperation between the school and the enterprise will be developed to varying degrees. On-the-job learning will have a clear framework. The importance of formal training varies according to the sector of activity and mode of work organization.

If one examines apart from the "informal" and on the basis of our case studies, the crteria for creating this typology, it would seem:

a) that integration of the "informal" in daily work is not pertinent. On the contrary it is the very formalized processes which can and do account for this integration. This is rather a tendency for discreet learning to being isolated within working time, this is all the more so the case, the less strict times controls are.

b) that the idea of autonomy in learning is confused; we stressed the emphasis placed on tutors and human resources which are involved in formalizing learning within discreet learning.

c) that the emphasis placed on working groups, on exchange and on building teams in the learning process cannot counter so successfully individual and collective forms of learning.

d) that if one can stress the absence of a programme (as a reference for knowledge to be acquired in the given learning process) this does not exclude forms of programming discreet learning.

e) that the cleavage between the resolution of problems and rupture is not as evident in the situations of organisational change which were studied. On the contrary, a series of informal learning processes prompt rupture and the creation of new forms of organisation. This has consequences for the nature of knowledge and skills involved in the informal learning process. This is not limited to teaching routine procedures.

f) that this final statement is backed up by the opposing aspects of observation-imitation and verbal exchange and issues to be questioned. It would seem that in the most discreet forms of learning we have observed that the transmission of knowledge and skills is not limitation to imitating but can also include more traditional forms of learning.

g) finally, it would can accept the opposing nature of the two forms of stimulation, the cleavage in terms of validation and certification is no longer pertinent. We shall return to this issue in greater detail in Chapter 5.

The trends identified are more towards rendering discreet learning objective in and through work and in certain cases giving their an educational value which makes them more similar to more formalized learning situations.

Consequently, in reality, the borders between the formal and informal approaches can only be clearly traced in the typology of psycho-educationalists. If there are boundaries they not only vary from country to country, sector to sector, enterprise to enterprise, they also vary depending on the time element in line with a series of contextual variables.

4.4 THE GROUPS AND DISSEMINATION/RETENTION OF KNOWLEDGE AND SKILLS

So far, in the analysis of new forms of organization and their learning impact, the interplay within the enterprise has not been touched on. For some time no attention was paid at all to information retention, resistance and blockages to the communication of information, to the transformation of knowledge and skills or even obstacles to the elaboration and circulation of divergent knowledge. Attention focused on identifying the various links between work, acquisition of competences and training.

But this discussion focuses on the inclination and positive mobilization of people and groups in the service of the goals of the enterprise as if the acquisition of new knowledge constituted, in itself, sufficient stimulus. Independent of the intention of the authors of this report, it could be felt that the new forms of organization encourage spontaneously the creation, development and dissemination of know-how and skills. The argument put forward is that by means of introducing new forms of work organization all the groups come out as winners even if, on various occasions, mention has been made of workforce down-sizing and the devaluation of know-how and skills as a result of these changes.

Some hypotheses make up the implicit basis to that optimistic analysis. Thus, for example, it is supposed that the enterprise, thanks to the broad spectrum of tasks and desegregation between departments and functions, will succeed in de-monopolizing know-how and skills and, at the same time, promote their development, transmission and diffusion by drawing on the joint mechanisms of encouragement and cooperation between individuals and by the organized transparency of information, know-how and skills. It is felt that the new forms of organization based on decentralized discussions, participation and desegregation of the vertical axe (between levels of responsibility) and the horizontal axe (between the different functions and services) will do away with any form of separation, segregation or opposition. In reality, they are accompanied by a spatial redistribution of workers which at the same time opens and closes communication areas. The composition of autonomous groups centred on one or more products without doubt encourages internal exchanges within the groups but in some enterprises, for example Belgium in the case of car headlight producer (B4), parallel to this there was a kind of barrier between the new groups. In that enterprise it was seen that the creation of a multiplicity of multi-skilled groups involved in the production of some types of headlights led to the exchanges of new knowledge and skills within each of the groups but that this exchange was more or less non-existent between the different production groups. In the groups, the goal was to desegregate knowledge but parallel to this other forms of segregation were instigated. The new breakdown of space, in turn, was a handicap to communication.

In the same way, it is assumed that occupational segregation and identities will be easily overcome by the advantages offered by the exchange of knowledge for everyone. The belief is that in the links amongst workers, the desire to retain knowledge is weak, if not non-existent, and that the same applies to tutors, foremen, functional supervisors and managers because in the long, as in the short-term, each one has to draw benefit from that communication. It is presumed that the desire to be different is weak and that the desire to cooperate with other workers dilutes personal ambitions, aspirations for success and career advancement. It is felt that competition between staff can be reduced by the enterprise structured along non-vertical lines and by forms of participation, democratic modes of operation and more egalitarian practices in the fixing of remuneration for example. It is forgotten that "de-differentiation", "desegmentation", "de-

departmentalization", "de-hierarchization", and the search for multi-skilling for operators are accompanied by forms of "de-professionalism": there is inevitably resistance to this loss of identity and professionalism and to the reduction in opportunities for upward mobility.

Furthermore, it is felt that workers who are grouped together in a work environment will have the capacity to listen to each other without a desire for rejection or exclusion as if the group did not make any selection, never expressed any preferences, and never had recourse to retaliation vis B vis its members. In the same way it is felt that the causes behind and the processes of conflict between capital and work are rules of a new entrepreneurial culture and that workers have taken up the goals of the enterprise. Given the existence of competitor enterprises, are not workers and employers now in the same boat?

It is unquestionably the scale of these problems which explains the development of human resources management in enterprises. Indeed, any new form of work division, any restructuring of tasks, has a profound effect on the various elements of the position and social condition of the various categories of workers. Each form of division labour corresponds to jobs, socialization channels, training and professionalism, professional identities, professional and social hierarchies, powers, remuneration, and opportunities for promotion. In the enterprise, the dismantling of traditional forms of work division and the restructuring of posts signifies the end of some occupations and professions, the elimination of some branches of training and learning. Any organizational change inevitably means an increase in tension and conflict because it alters the balance of power and, by extension, the interplay of interests and status quo within the enterprise.

4.4.1 Resistance: one way of fighting against uncertainty

Even if the new forms of organization are characterized by a focusing on the problems of training and learning and if qualitative flexibility which is developed is viewed positively by workers, we should not underestimate the relevance of uncertainty which very often overcomes them in terms of employment, qualification and career. The severity of the economic crisis does not enable them to imagine what the future might hold in store for them. Under these conditions it is utopian to believe that workers will spontaneously agree to pass over their inside knowledge which tomorrow will enable others to enter into competition successfully with them. Some will claim that this uncertainty constitutes an essential incentive. Others believe that this is an obstacle to the mobilization of workers for medium or long-term projects.

Furthermore, in the day to day life in the enterprise workers gradually form an opinion about these new forms of organization and about the increased opportunities for participation and training. Even if these opinions are not always clearly expressed, some cultivate the ideology of suspicion and are quick to believe that the new employer policies aiming to develop training, participation, the collective ability for solving problems and scheduling of work and production, are nothing other than the desire to acquire knowledge to benefit capital or to control absences and their effects or even to get around the trade union, the class spirit and struggle.

In the same way, plunged into work reorganization, it is not unusual after a certain time for workers to complain about the little time which just-in-time production leaves for learning or the exchange of knowledge. Collective discussion is restricted and does not necessarily lead to the continued (re)development of products, processes or work conditions.

In Chapter 3 we listed a number of internal conditions for work to open the area of learning. A large number of case studies show that these are only being respected in part: bad linkage of sequences (DK2), strict time controls (E8), general idea of "jack of all trades", and as a result this dequalifying effect of multiskilling (E4) hinders learning. These should not be seen as errors in an ideal model but as the product of economic and social contradictions and account for the great distance between new forms of work organisation and the older organisational forms.

Furthermore, even if the independence and responsibility of operators has been increased, it is not certain that the controls have been reduced. If the forms of control of work and workers and less physical and direct than in the past, they have become more subtle, more psychological, more cultural and more ideological. There has been as shift from imposed discipline to discipline regulated by the group. In the work circuit and in the enterprise we are seeing the emergence of quasi markets in which every member or work group often assumes two roles: that of the client and, by extension, of the supplier. Even if everyone is working for the same boss, each member of the enterprise works, as well, for one or more of their worker- clients, for whom he is thus the supplier.

The terms worker-client and worker-supplier are not without significance: they introduce a commercial element between operators within the enterprise. This stressing of relations of the "client-supplier" kind within the enterprise promotes the reduction of direct controls by foremen and the hierarchy but it does introduce reciprocal control of workers who, will blame each other for delays and sub-standard quality. Not only just-in-time but also the striving for total quality are forms of moral control to the extent that workers, themselves, try to identify faults. Faults can be systematically detected and attempts made to identify the person responsible.

Quality circles provide a forum for discussion of this. Sometimes the responsibility of the worker for quality is 100 % as in the case of the suitcase manufacturer (B1) for example, where the worker enters his name in the suitcases he produces. This testifies both to his pride in his workmanship and to his responsibility. In some enterprises integrated computerized systems may, thanks to mini data collection systems linked to a central computer, control the quality of production and work at each stage and not just at the end of the line. Decentralized control is thus coupled with a centralized system or a control superstructure which possibly informs the worker, in an on-going manner, of the quality of his work or the level of his performance.

"Last but not least", it may be the case that enterprises organize "feedback" on the basis of analyses of markets and customers by verifying the quality of the service rendered by the worker. From the point of view of the worker, internal control is doubled through control by the client, the ordering party or the user.

A very significant example can be found in F2: internal quality control did not correct an error. The customer returned an order. Identification of the individual responsible for the error, examination of how it came about and of its cost for the company are part of the new forms of management and of total quality control.

It is the nature and the effects of these new forms of control and the stress which they provoke amongst workers which is attracting the watchful eye of trade unions. From the trade union point of view, new forms of work organization with their participation techniques are nothing other than the setting up of more subtle means for controlling absenteeism, negligent work or even sabotage. In the eyes of some more critical trade union associations the new forms of organization and participation seem, above all, to be an attempt to bring about ideological recycling. They are like a spider's web or a net whereby increased participation in minor decisions conceals the edging out of workers from strategic positions. Finally, these new management techniques seek to instil in workers the idea that they are capable of influencing their situation. This is by no means clear.

4.4.2 Towards new definitions of professionalism

Viewed globally new forms of work organization are based on multi-skilling which enriches the work of the semi-skilled. But in respect of skilled work do they not lead to a kind of "de-professionalism"? Do they not give rise to a whole series of problems related to forms of professionalism and identity at work? If so, this would lead to resistance amongst professionals.

In fact, by desegregating tasks, by creating hazy borders between specialisation and by homogenizing work at the level of the basic groups, the new forms of work organization dilute professional identities and a sense of belonging and, in parallel, develop the feeling of belonging to communities such as the work group and the enterprise.

From a professional point of view, multi-skilling, "de-hierarchization", the dismantling of borders between specializations, exhausts the sources of worker motivation which, in the course of time have focused on developing specific skills. This attachment to professionalism, status and to the recognition this means, the idea of irreplaceability, to the possibility of career advancement and professional paths that it offers is particularly developed in some countries, for example Denmark or the United Kingdom. In countries in which professional trade associations are in the majority compared with industrial or sectoral trade unions, the search for professionalism determines choices in the field of work organization. The desire to respect professional identities and levels of professionalism and thus to introduce professional organization and division of labour is clear in the Danish enterprise involved in the production of pumps and valves (DK3). In that enterprise workers shared work depending on their degree of professionalism. Not everyone was keen to be involved in the production of all models but they allocate themselves depending on the more or less sophisticated nature of the valves and pumps to be produced. In the long-term everyone will learn to produce them but at a specific time the goal of the workers is, indeed, to maintain a specific hierarchy in line with the capacities and competences to be acquired in order to be involved in the most elaborate products.

Thus, as far as work organization is concerned, the possible choices are not positioned simply between a restructuring of tasks and a Taylorist division of labour but also between various forms of restructuring. The "jack of all trades" is not necessarily someone from the trade or a professional. In the opinion of some experts, the professional restructuring of tasks leading to a recognized specialization and professionalism is the only one which could fully satisfy the workers because this affords them social recognition and an opportunity for career advancement both within and outside the enterprise.

This reflection on forms of professionalism tends to show that there is not one unique form of work organization towards which it will be necessary to move given the impact of increasingly stiff competition. Quite the contrary, if it is true that in terms of consumption, we are moving away from a mass society towards a society of distinction to the extent that lifestyles and consumption styles are becoming distinct, it is normal for such socio-cultural differentiations to be reflected in working life and in the desire for differentiated socio-professional forms of work organization.

It should be borne in mind that the choices of new forms of work organization do not take place in a social vacuum. They are influenced by organizational forms on the social, educational and trade union levels and, more particularly, by the importance attributed to work and professionalism in a society in which there is a fear of unemployment, under employment and the outdatedness of occupational qualifications if not in the short then in the long-term.

But the restructuring of tasks and the desegmentation of functions not only affects junior staff. New forms of work organization also provoke resistance amongst categories, groups, functions whose professional identity and professionalism seem threatened such as foremen for example, and amongst categories of people in management and various services such as those involved in measuring time and motion, programming of production and maintenance. They, too, feel threatened by the new enhanced forms of the division of labour.

4.4.3 The ambiguity of supervisory tasks in the face of their changing role

New forms of organization directly affect foremen given the de-hierarchization of the enterprise in its new lean form, the independence and new responsibilities given to workers and the collective solving of production and work problems. This is what leads to the atrophy of traditional functions of management and control of work and production. The new forms of work organization, therefore, lead to the cutting back of the workforce at the level of lower management, which does nothing to reduce their resistance to change. Generally speaking within new organizations, foremen see their management steering and control tasks chiselled away and replaced by communication, facilitation, training and management of human resources, tutorship and counselling activities. Thus, even if a certain number feel threatened by the new enhanced forms of work, this danger is not necessarily a real one because their roles are developing favourably. In fact, new supervisors have to have technical and didactic skills. The foreman becomes a facilitator, an instructor, a point of contact with other groups. In this field, however, he may run into difficulties with a spokesman, or even a group delegate elected and nominated by his peers as in the German car body construction enterprise (FRG2).

Yet, on the whole, the role of foreman seems to be moving in the direction of technical support for operators, assistance in the management of tools and production and, for those individuals who have to be given back-up, perhaps even guidance in training. Some prerogatives in terms of personnel management are also decentralized to his level. "Of course he must have sufficient decision making powers in respect of personnel and its classification, and on the technical side" (Jean-Pierre Durand, 1993, p. 138). Furthermore, several foremen from the old organizational forms suffer because the reorganization of work often leads to the appearance at their side of new individuals whose qualities initially are very different from theirs.

4.4.4 Other resistance to the redistribution of tasks and functions

New forms of work organization lead to the restructuring of tasks on the level of operators whose responsibilities are extended to a whole range of activities for which they, so far, have not been responsible. This new division of responsibilities concerning supply, maintenance, scheduling and reprogramming of tasks, quality control in production of products, safety and hygiene at work but also the handling of minor breakdowns, maintenance tasks and cleaning of tools and machinery, does not lead to only happy faces amongst those who had been responsible so far.

This new sharing of tasks and activities geared to increasing the multi-skilling of junior operators is accompanied by the reduction or even liquidation of some specific services, to the disappearance of professional classifications and even some occupations. This is the case for the programming and scientific organization of services and work based on measurement of time and motion. Engineers, methodology experts and programmers of this services who are normally responsible for scheduling, planning, launching new products, are stripped of some of their responsibilities. Some people would term this the productive revolution (J.-P. Durand, 1993, p. 139) and new forms of work organization. In addition to a slimmed down workforce, people in these services also see their powers reduced. They view this amputation as a devaluation of their work undertaken previously for the benefit of the enterprise. Furthermore, in the new organization they have to reach a new understanding with all those individuals who, up until that time, had been simply the implementors of what they had designed.

By promoting "de-hierarchization" and the desegmentation of functions, the restructuring of tasks leads to a levelling of salaries and, parallel to this, to a reduction in opportunities for promotion offered by the enterprise. Some experts, furthermore, believe that by liquidating various professional identities and channels for promotion within the enterprise new forms of work organization tend to promote rather the horizontal mobility of workers and managers in and between the enterprises.

The case study DK2 shows clearly the contradictions of a hierarchy which is too flat and too distanced. The vacuum created between an indiscriminate group of operators and the categories of technicians had two consequences: the elimination of a "team worker", an obstacle to good cooperation and the dissemination of information and, on the other, an elimination of competition between groups and loss of motivation for career advancement leading to a solidification of individual position and a loss of organisational reactivation.

But does this not mean that the new modes of production and work organization are gradually going to spread to all enterprises, sweeping aside the social forces and the prerogatives of groups. According to J.-P. Durance, the extension of new models inevitably comes up against groups which, so far, had occupied strategic positions in the organization of production and the maintenance of production circuits. Let us imagine that the extension of new models of production and work could be undertaken in the form of a gradual spread, that would mean forgetting that these reforms of the production system and organization of work move via those services and those individuals which, so far, had been the intermediaries between management and junior staff. To believe in the transformation of the Taylorist models means evaluating "how the new production model in its anti-Taylorist orientation aims to spread throughout the enterprise its functions concentrated around methods" (1993, p. 140). How, against this background, can we imagine that these groups of individuals will be in favour of reforms which will cut back their prerogatives and upset the centralizing process at the basis of their professionalism? How can we believe that small and medium-size enterprises will be able, tomorrow, to avoid the creation of offices concerned with aspects of work organization.

This pessimist vision of possible developments in production and work systems no doubt results from the under estimation of the counter-trends: less and less clear separation between white collar workers and blue collar workers, the dictates of global productivity versus individual workplace productivity, the attention to quality and variety and thus downstream the structuring/restructuring of the different roles of direct and indirect production as schooling levels rise, the extension of competences at the base level and the increasing of sophistication and integration of machines and production systems. More research would be necessary to determine the importance of trends and counter-trends which encourage radically divergent interpretations of development: some see a development towards neo Taylorism and others towards post Taylorism as if each of the models were only possible alone and as if a combination of the two would be incompatible.

CHAPTER V – EXPLICIT TRAINING

If the central issue in this search is that of the training impact of new forms of work organization, we do however have to dwell for a moment on the forms of mobilizing "formal" training in the process of organizational change. It is not a question of undertaking a systematic study of training policies, their contents or the recipients. The aim is rather to reflect on a triple link:

a) If the processes of organizational change implies the mobilization of new competences, we also know that these can be found outside the enterprise. However, at the same time, there are signs of increasing use of continuing training in several countries. How, therefore, can continuing training organize the alternative between external recruitment and the internal change in the workforce?

b) The interaction between training policies and organizational change can take many forms. We could say, from a socio-technical angle, that continuing training is an ex-post adjustment variable of resources to pre-defined needs. Inversely it could be said that it enters the stage earlier as a component in a more global strategy in which all elements are interdependent. Finally, it could be said that not only is it a variable of construction but also a variable of change, the condition which enables those involved to "turn organization around".

c) Finally, we should examine the relationships between the explicit and discreet components in training: the level of use of formalized training can in fact be interpreted as substitution or complementarity. In the latter case there may be forms of juxtaposition, without any retro-action explicitly structured between the different components in training policies or, on the contrary, explicit forms of didactic construction in these policies which stress retro-action.

5.1 VERY VARIED USE OF FORMALIZED CONTINUING TRAINING

Examination of the case studies identifies varying degrees of use of continuing training although there is a clear trend towards increased used.

First of all, it must be stressed that the indicators available are relatively limited, that comparison brings with it major difficulties. In some countries the enterprises are able, relatively easily, to produce indicators of the physico-financial kind (percentage of payroll, volume of training hours). In others this is much more complicated. The disparity between the indicators available need not necessarily be interpreted as a sign of the under estimation of training issues. It also reflects the gap between the national definitions and models for the development of continuing training (e.g. importance or not of on-the-job training, relative importance of training on the initiative of the enterprise or on the initiative of individuals).

Despite this we can draw on several qualitative aspects which enable us to assess the importance actually given to formalized training. Thus, for example, the absence of staff specifically for this function or of a budget in a large enterprise is a sign of the weakness of training policy. In the same way, in DK2 (in contrast with DK3) the difficulty in clearly positioning training policy can be analyzed by way of the marginalization of staff representatives on this issue whereas the Danish trade unions, both by way of their structure and their links with training centres, are automatically part of the local training system. However, the existence of medium-term reflection on training policy, expressed in a structured training plan, could indicate a more strategic use of continuing training.

In respect of these different criteria, the range of situations proposed in this case study is relatively large.

5.1.1 From the absence of formalized training to a systematic plan

One case, which is less rare than one would think, is the absence or quasi absence of formalized training. It should be borne in mind that for a good interpretation, that when choosing cases, training policy does not intervene a priori. We, therefore, have to adopt a different approach when analyzing this situation. Organizational change, despite its initially important character, has not encouraged any new skill needs. This would mean, therefore, "neo Taylorist" situations. Either this need is satisfied by paths other than formalized continuing training (substitution or recruitment of new staff, informal training) or, finally, the absence of continuing training can be considered as indicative of a under estimation of the challenges of qualification in the process of change. Thus, in the case of B1 and E12, no formalized continuing training is offered to staff. The close examination of work organization does indeed reveal developments on the fringes (signature of products by staff in the case of B1) but the main lines of Taylorist organization are maintained without this being coupled with the real development of informal training. The second case has more to do, for example, with B3, F9 or E4 (for workers). Certainly formalized continuing training is not very developed.

By contrast, traditional forms of on-the-job learning, which are formalized to varying degrees (particularly in B3), are used as flanking measures for the recruitment of mainly unskilled staff without this leading to major skill problems in the enterprise. The situation was quite different in the Belgian pharmaceutical enterprise in respect of its "filling" section: a real attempt to develop work organization through the relatively systematic introduction of multi-skilling was only linked with a short course of training for staff. The problems of qualification and difficulties linked with working hours, therefore, led to a step back towards the old organizational form.

A second family of situations could be characterized by the term "emerging" training. The use of formalized continuing training is significant but remains marginal both in respect of the funds and training hours involved (from the point of view of the enterprise) and also in respect of the potential significance for staff concerned (a few hours per year, but often on a highly irregular basis). This situation is characteristic of several Belgian and Spanish cases in which the training volume was rarely more than a few hours per year, where there was no training plan and using almost non-existent or recently created training services.

It is significant that the emergence of continuing training activities and their organization often go hand in hand with organizational change. For example, in the Portuguese enterprise (P3), producing numerically controlled machine tools, training outside working hours for skilled workers has recently been introduced. In the same way, in the transitional phase, UK1 set up an extensive training scheme for its workers, followed by a complex system of more individualized activities along the lines of self-training, whereas the continuing training of these categories had been more or less non existent so far. It should be stressed that for some of the Spanish cases, this emergence of continuing training follows the disappearance of the enterprise school which had provided initial training (in apprenticeship form to new recruits). This is a process, known in France around 1971, involving a drop in initial on-the-job training and, after a certain time, the emergence of continuing training.

A third family of situations has more to do with the "strategic" use of continuing training. The funds earmarked for this activity amount to a significant percentage of the payroll. The average training hours may pass through the ceiling of 15 hours per year. The training resources in the enterprise (existence of a training officer or a clearly identified service, perhaps trainers, separate budget, training plan) can be considered as the signs of special attention to this function. This situation is to be found in Denmark, France, Germany and the Netherlands. It is characteristic of sectors in which there is a long tradition of enterprise involvement in initial training (banks in all countries), but also, more extensively, in countries with organized apprenticeship (DK and FRG) and finally those in which there is a strong public encouragement to structurally contribute to the development of training practices (F).

5.1.2 Public policy and refinancing

In their training policy enterprises may draw on various kinds of support or public "refinancing": free or semi free use of public training centres, access to direct subsidies for all or part of their training activities. In the countries studied, there seems to be a clear divide on this point, at least in theory and in terms of the main principles. On the one hand, there are countries in which the public/private division is strict: apart from "priority" groups (the unemployed, young people), public funding cannot be tapped in any way for training of staff. This is the case in the United Kingdom, Germany and Belgium (sometimes with the development of mixed contractual forms). In other countries public funding can be mobilized in the form of free access to or assistance with training activities (DK, E), possibly in the form of direct subsidies to enterprises (France for the commitments to developing training, Spain and Portugal for the use of the European Social Fund) or by way of more structural incentives (Act of 1971 in France).

This divide in respect of financing is not significant in itself. We also have to consider the national characteristics of training systems (initial and continuing), to the overall structure of public policies in order to better identify interaction. Furthermore, the regional dimension must also be taken into consideration.

Examination of the case studies reveals three categories of situations.

Countries with a systemic system of training in which the private/public borderline is of little significance given the importance of apprenticeship, the varied involvement of the various agents (heads of enterprises, trade unions, local authorities). In this case corporate policies mainly draw on this network, mobilizing the resources even if they cannot be strictly labelled as "public": this is the case in DK2 and DK3 where the local training fabric, with the involvement of the social partners, plays a major role in enabling some enterprises to develop systematic policies (utilization of AMU centres for example) but also in Germany where the impact of the overall dual system shapes enterprise practices (by way of their internal didactic schemes and the role played by the Chambers of Commerce). It is likely that in singling out, for example, Emilie Romagne in Italy, Catalonia in Spain, it would be possible to develop the same analysis, although to a lesser degree.

Countries with a highly developed system of direct public intervention: in this case training policy (initial and continuing, including the immediate links to the development of work organization) is considered as a legitimate area for public intervention, this is done legislation, incentives. In our opinion this is the case in France (utilization of contractual commitment to training development in F8 and F3, of the National Employment Fund (FNE) in F1), in the Netherlands and potentially in Spain, by way of the role of INEM which provides services and funds to E4, E13.

Countries without intervention, either because this absence stems from the explicit policy of public authorities, in the name of liberal policies, or because it stems from the relative weakness of the state (and the supra enterprise organizational forms of the social partners) in the field of public policies with or without training content. This last category also includes Portugal (at least for the period towards the end of the 1980s and the beginning of the 1990s to the extent that reforms of initial and continuing training policy are in the process of making major changes to the landscape), the United Kingdom and probably Italy, with the exception of a few regions. However, even for these countries, analysis must be differentiated as soon as Community funds can be mobilized to support entrepreneurial policies. For example, the initiatives of P3 benefit from Community funding. In the same way, 80% of the funding for the training plan of P2 stems from the European Social Fund.

More generally speaking and beyond the boundaries of this kind of typology, it should be stressed that recourse to the European Social Fund and to Community programmes is reflected in our case studies for Portugal and Spain but also for France.

5.2 ENDOGENOUS TRANSFORMATION OR SUBSTITUTION; IMPACT ON RECRUITMENT POLICIES

Given the levels of observation, it is indeed difficult to position exactly the overall external movements of staff.

One first lesson is clear: with very few exceptions, the organizational innovations studied are all accompanied by a negative development from the point of view of employment. It is the "hard" core of staff which is left behind after the labour force has been trimmed down (or which makes it develop prior to this trimming) which is the objective of the continuing training policies mentioned above. It is affected by the various forms of informal training mentioned in the previous chapter. The most extreme case is the English refinery (UK3) which saw a reduction in staff from more than 5,000 to 500 today. The intensive training offered to the latter will not encourage them to forget the uncertainty (to put it mildly) about the others. But apart from this extreme case the situations in which there was a considerable decrease in staff already undertaken or envisaged are in the great majority. Reorganization for reasons of productivity and competitiveness, whilst stressing human resources, do not escape in the short term the trend for a relative reduction of staff. In the medium-term there is no sign of a reversal of this trend.

Against the background of this over interpretation of this context the possible mechanisms of substitution or transformation of recruitment policies should be reviewed.

As for the first point, given the scale of redundancies, the constraints which are borne of the need to maintain (at least at a minimum) the skills and know-how of the core left behind (constraint explicitly mentioned for example in the case of the shoe making enterprise in France, F1, and in an indirect manner in other cases in which the older staff are maintained temporarily to act as trainers, as was the case in the Spanish printing house, E5, where the best workers in trades were asked to set up their enterprise in order to function as sub-contractors) and, on the other hand (even if we do not have all the information on this point), because of trade union pressure, the mechanism of systematic substitution through the departure of the unskilled and/or the most aged to be replaced by young people is not the chosen path. Emphasis is put on the endogenous change in the most stable core. However, there are cases of substitution in NL1 (under "constraint" in this case, the oldest staff not having been able to adapt to the changes made), in the bank, where often redundancies affected the staff with the lowest skill level whereas at the same time there was recruitment of more highly skilled staff, for example in F7.

There are very contradictory moves in respect of how recruitment is developing. Generally speaking, and to support the thesis concerning the relative rise in the level of qualification, the case studies stress the trend towards the increase in the level of recruitment, by calling on young school leavers. This development, however, follows in a relatively homothetic manner the increase in the level of education of people completing their schooling. In one way, the trend towards a higher level of education, coupled with organizational developments, seems to be bringing about a shift and what could be considered as a minimum social standard on recruitment. This inevitably leads to downgrading (at least in connection with recruitment opportunities in the enterprises we examined) of those who do not meet that standard (e.g. below intermediate level of secondary schooling or with no vocational training).

The new organizations seem to be more closed whereas before they were "non skilled" [8] environments; this contributed to increased segregation on the labour market. Thus F8 had based its recruitment on a majority of unskilled workers or those holding the CAP in other specialities. Its new qualification structure, set up by way of continuing training and organizational change, is based on the equivalent of the specialized CAP and in future new recruits will have to meet that standard, particularly as the context of high unemployment makes this easy any way.

This trend towards a higher level on recruitment on junior staff is stressed in most of the summary reports (cf. for example the French report, the Dutch report, the Spanish report).

However, we must stress the inverse movement which concerns a small number of cases: the initial trend to what seems to have been a flight forward towards the recruitment of people with more and more certificates, particularly as the climate on the labour market makes this possible. With hindsight, the enterprises see this kind of experiment as somewhat negative. Of course some of them, in a depressed economic climate, could recruit relatively easily and at low costs. But any change in the situation on the labour market leads to a high turnover with loss of the flanking effects of training, of experience acquired. Moreover, the inability to offer good career prospects further exacerbates the malaise of these categories. Finally, their recruitment is often at the expense of a high degree of heterogeneity in the groups, leading to a need to seek for continuity between the new and the old. When, in the extreme case, new members of staff are concentrated in some functional services which have to be desegregated, the contradiction is even more apparent. This was the case in F7 where the competition from Luxembourg was felt and they did not manage to maintain many of the new skilled staff recruited in order to replace old staff. Today, we can see the emergence of a policy of recruitment at baccalauréat level coupled with preparation of supplementary certificates by way of apprenticeship or qualification contracts.

---

[8] By stressing the relative character of this concept. Young people who leave school on the lowest level have an education which is at least equal to, or sometimes higher than, that of preceding generations. However, in many countries there is still a high percentage of young people who fail at school but who, it would seem, do not find jobs in these organizations.

In the last chapter we shall come back to the political consequences of this shift in recruitment practices. For now we would simply like to stress that there is a two-fold challenge in continuing training practices (discreet or explicit). On the one hand, this is a powerful tool for developing skills in line with change in organizational forms, a tool which should not be reduced to a flanking measure to deficient initial training to the extent that integration between training organization is seen as one of the necessary conditions for dynamic new forms of work organization. On the other hand, the new continuing training practices could help to tackle the difficult problem of integration into the world of work and the training of semi-skilled young people entering the labour market. This second aspect is not very evident today given the levels of unemployment which make possible very selective recruitment practices. However, it is there.

5.3 DESIGN AND CONTENT OF POLICIES

Let us now examine the training policies introduced, first of all from the angle of their design and then from that of their content.

5.3.1 Collective training/individualized training

A first point of division lies in the importance attributed to the individualization of training. This question takes in a whole series of heterogeneous concepts on the basis of which it is difficult to establish a clear clarification. But let us venture a proposal.

A first dividing line could be drawn around the problem of the construction of "individual training paths". If the hypothesis of a desire to increase competences linked to growing autonomy of the individual is accurate, it could be said that we are moving from a "prescribed" model of training, taking in whole groups (the mass treatment of a problem via "curative" training) to a more individual training model, encouraging a demand for training but against the background of a training curriculum oriented towards medium-term requirements and organizational dynamics.

A second question is that of the modalities of training themselves. There, too, and at the risk of being schematic, we could set the standard training model (practical training, school curriculum) against the individualized training model (the archetype of which would be the different forms of self-training but which in an interim form would be a specific concept of a practical training course or a curriculum in line with the needs of a specific category, with perhaps different speeds for moving through the curriculum). There are four polar modalities.

Training modalities **Passage through training**	**collective**	**individualized**
collective	A	B
individualized	C	D

Case A represents the current practice in several case studies: a "skill" problem is attended to by means of training, decided on in an authoritarian manner, for a group of trainees in a "standard" practical course, be it organized outside or within the enterprise itself. This kind of practice can be found in the German case FRG1 and in numerous Spanish cases, in UK3 (at least for the first period), in P2 and in F9.

Case B corresponds to the same prescription of training but is organized in a more individual manner: desire for individual registration in a practical training course as the need arises, encouragement for the individual to attend external courses. This form can be interpreted in two ways: either this is the implementation of what is often called "the catalogue system": after identifying training needs, the enterprise proposes a catalogue of training and, depending on the resources available, staff can register. This practice often goes hand in hand with the "emerging" training situations described above.

But the other interpretation is that it is closely linked to the national systems of individualized training which were already in existence or are developing through public stimulus. Thus, in United Kingdom, the individual system is embodied in a training passport and by strong encouragement to attend sessions which draw on self-training concepts. However, the linking of this to internal career plans is not always obvious. In Denmark the use of external training centres linked with the category division based on trade union structures, also leads to strong encouragement for individuals to attend "B la carte" external training (DK3). Evening classes for professionals in the Portuguese enterprise (P3) also come under this category.

Cases C and D show a shift towards the elaboration of individual development plans, which imply encouragement of initiative amongst staff in the elaboration and development of this plan. This model could be found, for example, in the plans for systematic multi-skilling which imply the progressive acquisition of various know-how, in the articulation between forward job management and individual career plans in the case of the bank.

In C, the model maintains individual registration for "standard" training (but here it is more frequently within the enterprise, that is designed by or for it). This is the model which prevails in F8 in which practical made-to-measure training courses, are attended by selected members of staff who are sent for training depending on their current situation with regard to the multi-skilling plan. That is also in part what is to be found in DK3 or in most of the banks.

In Denmark the most significant form is the development of self-training practices, supported for example by some banks. Here the dividing line between explicit and discreet training is less clear. This category should include the German enterprise which staff mobilize wherever this is required, undergo self-training linked to office administration software. In the same way F5 and F6 are good examples of this model.

Generally speaking, it could be said that the trends have progressively moved from the first to the second line in the table with, depending on the didactic traditions in the countries, an orientation towards case C or D.

5.3.2 Hierarchical segmentation

A second point in this very clear division is hierarchical segmentation. Generally speaking it can be said that training goes to training and that the likelihood of access to formalized training is linked to the worker's position in the enterprise hierarchy. Some of our cases did not move from this classical model: the further down the hierarchy the less the access to explicit training. This was frequently the case in Belgium (B1, B2, B4), in Spain and is still true for UK1. This brings us up against the limits of marginal or emerging training policies which are mainly for management or for less skilled staff on a more sporadic basis.

Access to continuing training continues to be unequal despite the statements made about its economic importance and its being able to correct inequalities. If we accept the hypothesis that there can be no truly flexible and skill generating organization without access to qualification and, above all, without the creation of collective competences for all levels of the organization, we then measure the gap between this model and day to day practices in cases, however, selected in principle for the scale of their organizational development.

However, most of the cases testify to major changes along those lines.

A first line of development is the fact that discrimination in access to explicit training is decreasing rapidly. Where organizational change is the most advanced, where the search for a new socialization of individuals and a new functioning of groups is the most clear, training may also be offered on a large scale to skilled or unskilled operators. Taken to the extreme, this principle could even lead to positive "inequality": priority is given in training schemes to the less trained categories, particularly when they are threatened in the long-term by current developments.

Thus training is mobilized against a dual background of upgrading skills and perhaps the selection and de-learning of former forms of work organization. Thus, ten years ago in F7 the annual training expectation was roughly the same for management and other categories. Today, the latter's expectation is twice as high as the former's. Activities designed for the less qualified at FRG1, in the cases NL1, F1, P2, are moving in the same direction. Without being statistically significant, there is a policy of this kind in DK2, F2, F3, F8, where specific training activities have been introduced for less skilled groups. To a certain extent, organizational change linked with the continuation in the enterprise of some of the "hard core" of the less skilled or unskilled is a strong indication of the under-training of white-collar workers. It leads to a clear shift in the target groups in training plans.

But we have to take this analysis even further. If we accept that one of the goals of restructuring is to modify the hierarchical line and produce new principles of cooperation and development of independence then there could be grounds for believing that some training schemes could contribute to this modification as soon as they are oriented more towards groups, transversally to past divisions in terms of hierarchy, category and function. Some elements of this trend can be found in a few French cases (F8, F1, F5), in the Danish cases (particularly DK2 and DK3). By contrast, it seems that this movement is more limited in the Spanish, Portuguese and Belgian cases. It is clear that where most work is being done on the hierarchy and on divisions on the basis of categories and functions that these "trans category" training schemes are developing most.

5.3.3 Sharing the training load

The ways in which the training load is shared are also developing. It should be said that, here, we are talking about the training of staff in the full sense of the term, but not about the various forms of educational leave. The macro reports stress that most countries have adopted forms of educational leave which facilitate access by individuals to training of their choice normally outside the enterprise. These statutory or collective provisions are outside the scope of this report. We shall concentrate here on the assuming of the enterprise of "prescribed" training of training requested by staff under their employment contracts. Here, there seems to be a trend towards sharing the costs.

This movement is, first of all, linked quite simply to the growth in the volume of training provided. When training only accounts for a marginal amount of expenditure for the enterprise or the individual there is no problem. But with the increase in volume, costs and the development of contents, and more particularly, clear orientation towards specific aspects of the enterprise, the debate begins. In our case studies we could identify three situations which are characteristic both of national traditions and the development of links to training:

a) "Purely individual"

This takes in training which is viewed as an "individual" investment, mainly outside the enterprise (total or partial funding by the staff member, courses outside working hours). As this is not very compatible, as we have said, with significant training volume, the situation is quite rare. What it means in plain terms is the opportunity for the enterprise to shift to the individual, or rather to external funding, training which is, however, of a certain interest for it. We find situations of this kind involving evening classes which are publicly funded in P3 and in various Spanish cases.

b) "Purely enterprise"

Unlike the first, the second describes a situation which is dominant even today, (although dwindling) in France, Belgium, and in the Portuguese enterprise which took on board the "French" model. Most frequently this corresponds to trade union expectations of training free of charge for staff as soon as this corresponds to needs within the enterprise. The enterprise, therefore, assumes all costs linked to training for its duration (travel, training programme costs). It should be borne in mind, however, that the "purely entrepreneurial" may also draw on free access or reduced-cost to training centres offering publicly funded services (INEM in Spain, FOREM in Belgium, AMU centres in Denmark) and possibly on subsidies (European Social Fund, National Employment Fund in France).

c) "Co-investment"

The third situation of "shared expenditure" is apparently what is developing in various cases of "strategic" training. For the enterprise this means a form of cost sharing. But it also influences mobilization within the framework of the creation of new professional identities, against a background of a quasi contractual commitment of the staff member vis B vis the goals of the enterprise: individual effort, document by direct costs for the staff member, is considered as the necessary element in the active involvement of the individual in the professional project proposed to it by the enterprise. This sharing can assume many different forms depending on the traditions in the branch, national characteristics or opportunities, and strategies of enterprises.

As demonstrated in the case of numerous banks (France, Portugal, Spain, Denmark) this sharing can be linked to the nature of training offered, along the lines of complementarity: the enterprise assumes responsibility for training to adapt workers to workplaces, internal (even very long) training, training assumed wholly by the individual outside working hours, supplementary training, normally validated by a branch certificate. They all document the increase in the level of his training. This individual effort is, therefore, a "plus" as far as internal or external promotion opportunities are concerned. It rests fully on a willingness to take part; the individual contribution is, therefore, often in the form of leisure time dedicated to evening classes, weekends.

We can also formalize sharing negotiated within the framework of the scheme instigated by the enterprise. One French case of basic retraining demonstrates this (F8): a course of practical training over a long period is assumed by the enterprise and attended by staff partly during working hours and partly outside. A similar model, but based more on the "liberal" tradition of the cheque can be found in the English case in which a staff member is given a training cheque, which he is free to use (UK3). But we also find this idea of sharing in the case of DK3. The situation here is more complex, to the extent that the training network (bodies linked to trade unions) is, as we have seen, less clearly specified as public or private and to the extent that public funding can be obtained. We should add the use (unique in all cases) of periods of under activity for training purposes which make this model even more complex.

What remains is the kind of "co-investment" as a solution which is gaining ground, as soon as it takes up the two challenges described above: reducing costs for the enterprise and creating a new attitude amongst staff towards the enterprise and their careers. It should be added that this solution offers a third advantage for the enterprise: once it appeals explicitly to "individual effort", it can to a certain extent exert a subtle influence on the results of training: "non-obligation" of taking account of the results and at the same time considerable pressure on the individual who would like to see account being taken of that training. But at the same time, the idea of co-investment raises the question of certification.

5.4 MAIN LINES IN TRAINING CONTENT

In this report there can be no question of undertaking a detailed analysis of training content. The range of practical training, instruction and self-training schemes is very diverse given the specificities of the various sectors of activity and social effects. Furthermore, the data at our disposal merely give us the names of the courses without us being able to decipher what is behind them. However, pointing out the major trends in the most significant policies can help to throw light on the situation in respect of new competences and facilitate discussion on the development of initial training and its articulation with continuing training.

5.4.1 A return to initial general training

This first aspect of training plans is particularly significant in enterprises in which there was a very low level of basic skills. Often conceived as a means of upgrading knowledge prior to participation in other training, these activities take in various modules: refreshing of knowledge in mother tongue, written expression, basic mathematics). They may also be backed by "learning to learn" methods which aim to permit adults to relearn the initial learning mechanisms. This approach can be found in countries with a school-based system when organizational change is particularly strong and implies large-scale activities to upgrade the skills of staff who are relatively old and have a relatively low level of initial education (P2, NL1, F8).

5.4.2 Extending technological and vocational know-how

The second line in training programmes of this kind could be described as further training in occupational know-how. These are most frequently sequences with both a theoretical dimension (basic principles in electronics, electrical engineering, automation, numerical control),and a vocational dimension: using machinery, resetting, basic maintenance, perhaps supplemented by a practical dimension in a work situation or in a mock environment.

As we have seen above in respect of the restructuring of know-how and the reorientation towards the product, what is noticeable most in this kind of training activity are the various combinations of content, the work which is done to reorganize various families of know-how and skills. In UK3 (where the divisions between production and maintenance have been dismantled) the intention is to combine sound knowledge of mechanical engineering, electrical engineering and instrumentation. In FRG2, the programme for technical training takes in knowledge of mechanical engineering, robotics, and electrical engineering. It also involves practical training with the manufacturers of machinery, theoretical instruction in the classroom, in the workshop school and some time at the workplace. In F3 the successive modules of worker training also include a first induction at the workplace followed by training in automation and a third level, preparing for the skilled worker level, a series of training in automation, electrical engineering, mathematics, supplemented by training in general education such as that mentioned in the previous point.

From one case to the next, the overall duration of this kind of training varies considerably of course. Where it is a matter of simply offering sporadic training to produce knowledge (simple adjustment to a new machine for example) training is relatively short (a few hours a week) and training is very compartmentalized (in terms of content but also of target groups) (particularly in the majority of Spanish cases). By contrast, the trend to put together real integrated training curricula is very strong in the French, German, Danish, Dutch cases and in one Portuguese case; these curricula can extend over several hundred training hours.

5.4.3 Training in communication and group work

A third line covers all training which is developed directly to support the more collective organization of work and the necessary exchange of information. Of course the two categories mentioned previously are involved here too. But often sections are added which are explicitly focused on mastering communication (oral and written) particularly in group work. This category could also include initial training in informatics enabling participants to enter data, to consult a screen. Finally, there is a considerable increase in training in foreign languages, particularly in multi-national enterprises (French classes in P3, basic technical English in F8).

5.4.4 Increase in training in quality and management

This last line of training plans reflects the desire to develop managerial skills. In its simplest form, it covers various training in quality and standards: simple awareness of total quality, introduction to quality control (metrology and statistical techniques), introduction to costs of non-quality. In a more complex manner, this can be supplemented by an introduction to the economy (national or the enterprise), and by an introduction to the product market (including links with clients and suppliers). This is where we see the introduction of just-in-time techniques, stock management.

5.4.5 Training for trainers and internalization of training

Finally, a separate category must be reserved for the training of trainers. As we are dealing here with formalized training it is not possible to identify in the cases a general trend towards the internalization or externalization of training. The solutions chosen depend on the nature of training (in accordance with the categories described above), external opportunities offered by training bodies and the density of provision. They also depend on the national tradition of the involvement of enterprises in initial or continuing training, of the didactic potential which they have, again dependent on their size. Thus, FRG1 and 2 have dozens of full-time trainers, both for apprenticeship and continuing training. By contrast, P3 and F9 have none. Furthermore, it would probably be overly narrow to simply set the process of internalization against the process of externalization.

There is a trend, where the most extensive changes are taking place, for enterprises to equip themselves with didactic skills (P2, F7, F8, UK2 and UK3) which enable them to undertake directly a certain number of activities. This trend may extend as far as learning software (e.g. for handling numerically controlled machine tools at P3). But this trend does not mean the setting up of a pool of "professional" and permanent trainers. It takes rather the form of the didactic training of ad hoc trainers, managers, supervisors but also junior operators who attend training courses to that end (normally relatively short, lasting about a week).

A second trend involves bringing in, in different ways, external training bodies. They are invited to participate in the preparation of the didactic side to these training schemes. Thereafter, they will only be brought in to run some sequences or some training courses, the others being provided internally. There is, therefore, close interaction between internal and external training. The cases of DK2 and DK3, F8 and F2, P2, E7 and E5, are

BEST COPY AVAILABLE

very representative of the creation of a training space which leads to relatively strong structural links between the enterprise and its environment.

The provision of training by an external body, therefore, tends to mean the provision of a complex service, bringing together didactic engineering and training in the strict sense and helping the enterprise to equip itself or to tap its own skills.

5.5 VALIDATION, RECOGNITION AND CERTIFICATION

Here we shall examine the problems of validation, recognition and certification without distinguishing between explicit and discreet training. Although this problem is of a more delicate nature and more difficult to solve in the case of the second, it still presents itself in more or less the same way today.

By validation we mean the various forms of taking account of new skills and competences used at the workplace by the enterprise: keeping a post in transition by extending tasks, multi-skilling. By recognition we mean all the objective forms involved in rewarding the competences acquired: salary bonus, development in terms of classification, promotion. By certification we mean the overall forms of objectivizing training undergone in a certificate or diploma without limiting ourselves necessarily to that. We shall see, in fact, what forms of certification escape the classical concept of the certificate, which does not mean, any way, the same thing in all countries.

a) Validation could, paradoxically, be defined negatively: it is the spectrum of situations in which training, without leading to a pay increase, enables monitoring of organizational development without being excluded (or to survive within organizational change). Hence the situation is more frequent than one would think.

In a relatively general context of pressure on labour force size and increased control of the payroll, there are clear signs of a weakening of interest in training for the individual. The salary advantages are often limited, the transformation of classification systems does not necessarily move along the lines of increased recognition of training. Career prospects are sometimes reduced after changes in the hierarchical structure. Now, given the increased efforts required of the individual, it is unlikely that mobilization will be effective unless coupled with some form of reward. It is not a question here of social justice but rather of economic efficacy: if one accepts that qualifications are at the heart of new conditions of productivity, then establishing the best conditions to develop that qualification, and to fully develop training, is a key economic issue for new organizations. Certainly one could always argue that, in the classical situation of human capital, where the enterprise bears the costs of training it should not have to recognize it. On the one hand, in addition to the costs themselves, individual effort is undoubtedly necessary given the increase in training activities. Furthermore, we have seen that the concept of cost sharing is spreading.

In some of our cases in which there was the highest level of labour force down-sizing the "deal" proposed more or less explicitly to the staff member is as follows: organizational change is vital for the future of the enterprise and your job; it will only be successful if coupled with the positive development of your skills by way of training. We will guarantee you a job at the end of training (or a higher likelihood of keeping your job), with the possibility of career advancement.

This situation can be found, for example, in the case of the English refinery (UK3), in the case of junior staff in the French bank (F7), in the German electronics enterprise (FRG3), in F9, B2. This situation is all the more tempting and easy when pressure of unemployment is high and is not likely to slacken off in the years to come. However, it also brings with it a number of risks in the short and long-term. In the short-term it establishes training as a powerful weapon of selection for management and for creating competition amongst staff. It may also discourage those, who on the basis of their initial training, age or professional experience, are the least likely to succeed in training. To a certain extent it reinforces segregation. But it may also have an impact in terms of retention (privatization) of know-how and skills and thus constitute an obstacle to their collective transmission in the case of functional desegmentation.

b) Let us now look at the question of recognition, whether it be in the form of a "salary bonus" or other advantages, for example promotion.

The salary bonus (without promotion) is sometimes envisaged, directly connected with increased efficacy of the new organization: individual or collective bonus, increase in grading with multi-skilling. Where organizational change has been the most extensive, it is rare for this not to have an effect, even minimal, in this respect. All the banks, F8, F1, F4, the Portuguese electrical enterprise, P2, some Spanish enterprises, are in this situation. We should, however, stress the complex nature of the links which emerge between training and salary: in almost all cases (with the exception of some banks and a few enterprises in which the multi-skilling system involving the individual ability to hold several posts, whatever the reality afterwards, that is to say the number of jobs actually held, cf. F8, UK1, DK2), the link which is established is never direct: attendance of one or the other training schemes never brings with it an immediate salary bonus. This is linked to the actual results be it, for example, in coping with just-in-time, quality criteria or, in a stricter sense, economic results. The trend is, therefore, towards the progressive elaboration of new salary standards, less anchored in time control or demographic systems (seniority) and more oriented towards the results achieved. Training is, therefore, recognized but in a mediatory manner which is reflected in its new organic position, closely linked with the overall organizational and production situation.

Let us now look at the question of promotion. Let us accept, for the time being, the traditional concept of promotion, understood as the opportunity to make a considerable step forward in terms of career (from unskilled to skilled, from skilled to highly skilled, from operator to supervisor). A first observation can be made on the basis of all the cases: the mathematical probability of promotion is dwindling. Firstly, use of the most stable staff reduces the opportunities for promotion. Secondly, the relatively low level of turnover limits opportunities for promotion through renewal (linked to a post becoming vacant). Thirdly, the reduction in the hierarchical lines, and more particularly the challenging of the role of supervisors, has an effect on the ratio of vacant posts, filled posts, on the mathematical probability of promotion. Finally, in some enterprises the trend towards direct recruitment leads to increased competition between new young arrivals and staff already in the enterprise. It is, therefore, not surprising that often the perception of career opportunities is somewhat negative and that there are doubts about the relevance of training (cf. UK1, B3 and F9, E7, some categories in P1 or F7).

But this statement cannot be applied in across the board. Some enterprises set up their new organization whilst endeavouring to counteract the trends described above, by setting up new promotional channels, sometimes even by decoupling the question of the position of the staff member from that of the post he or she holds. Perception of promotion opportunities linked to training (discreet or explicit) is therefore far more positive: enterprise manufacturing numerically controlled machine tools in Portugal P3, P1, with a very large increase in promotion F8. There, too, this is based on a clear shift in the rules on which this promotion is based: on the one hand it becomes the exception for promotion to be linked to automatic criteria of the seniority kind; on the other hand, and in parallel, individual assessment, is usually relatively formalized (annual assessment, competences audit); it becomes the basis for selecting those who are to receive promotion. Finally, training is used in a systematic manner upstream of promotion.

However, we should return to the definition which we accepted at the beginning of this paragraph. In fact it would seem that the concept of promotion in the classical sense of the term is becoming confused. Defined less as hierarchical advancement, it is linked more to the opportunity to use transversal competences, to development prompted by the parallel change in the workplace and salary. Some significant examples can be identified. The archetype would be case F8, multi-skilled operators develop by collecting ratings for each workplace they master, whether they actually hold it or not. But they still maintain their basic classification as worker. In the long-term, some reach a rating equivalent to a highly skilled worker in the grid for the French metalworking industry and even beyond. The positions acquired do not imply any hierarchical advancement but a functional extension. This could be described as "transversal" mobility which does not lend itself to the classical definitions or statistical categories of mobility. Other examples can be found, for example, in the English refinery in which operators hold maintenance posts within a rotation system for periods of one month. In the same way, in DK3 the new structure, including the systematic use of one form of multi-skilling, gives groups the opportunity to tackle together the problem of design (of new products) and production. One of the central problems of this new organization is thus that of restructuring on a different basis mobility channels which are not supported by the former hierarchical structure. In the extreme, as suggested in the French national report, there may be a decoupling between the workplace and the job status involved.

c) So far we have not touched on the question of certification. In most cases validation and recognition are not linked to certification extending beyond the limits of the enterprise. What we might perhaps see is the development of ways of circumventing the officials grids and certificates: the most significant example is the training of skilled workers without a certificate as Facharbeiter in FRG1. However, the operators who reach a highly skilled level in F8 without holding the CAP are also part of this trend.

In most cases of explicit or discreet training, the subject of certification is not addressed. This applies to the majority of Belgian cases, some French cases, and most Spanish cases. Certainly, the absence of certification does not signify the absence of opportunities for internal or even external validation. The reputation of the enterprise on the local labour market, the links established with reputed training bodies, or transversal competences acquired may suffice in terms of validation in the case of external mobility. Sometimes an in-house certificate is issued which is more or less recognized: in-company certificates in the strict sense in F2, certificate recognized by the City and Guilds in UK3.

But these are certainly limited in respect of more extensive external mobility. Enterprises are aware of this and they are endeavouring to certify the training they offer. However, a distinction must be made between explicit and discreet training. In the case of the former, the trend is to work towards training leading to a recognized qualification (public certificate in the case of P3, some training provided in Spain, branch certificate for training provided in all countries by banking institutes) or possibly to provide training which will lead to certification (e.g. modular schemes based on cumulative study units, links with the system of public certificates in NL1, DK3). In the second case, we face the major problem of certifying what has been learnt in discreet training. Some enterprises explicitly raise this issue.

The different national reports, moreover, stress the inadaptation of classification and thus the need to establish more new, more fitting designations and classifications. This is particularly necessary since, beyond traditional classification, workers tend to hierarchize positions and enterprises on the basis of new criteria and sometimes their skill generating or routine character, a criterion which so far had little weight.

Only the German unions seem to have negotiated certification modules within the dual system, at least as far as initial vocational training is concerned. Within the framework of that system, they are involved both in the preparation of job profiles or employment reference points, in the approval of programmes and in the definition of modalities for certifying training. The British also have a general certification system: the National Vocational Qualification (NVQ). The Danish trade unions, which are essentially professional associations, also have some powers in this field. In other countries, systems for the certification of learning and competences acquired at work are in the initial stages. In France, the competence audit could mark the beginning of an official system for validation and certification.

But as already stressed by G. Dupont and F. Reis in an earlier CEDEFOP report on continuing training policies in large companies, this certification is the exception to the rule. This is undoubtedly because those concerned (employers and workers or their representatives) do not have the same interest in recognition. Most frequently, the employer will not want to confirm in an official manner the level or type of skill because this brings with it the risk of opening the door to staff demands or encouraging the recruitment of that staff by his competitors, although he was the one who invested considerable time and money in their training.. If, on recruitment, the employer has an interest in verifying the certification of skills and their approval by the state or by competent vocational bodies, later it is by no means rare for him to refuse to participate in setting up a more extensive validation process to support the skills to which he, himself, has contributed.

All the same, whatever the reservations of employers about certification forms, these are of interest to workers as indicated by several case studies. This in-company certification implies that it will be officially empowered to issue certificates. But we could imagine that certification could be undertaken by joint bodies on which there are representatives of the social partners and the schools or public administrations normally in charge of certification. This certification also implies the elaboration of techniques aiming to draw up know-how audits for example. These audits which are registered and certified as, for instance, in the English NVQ, or are given official status by an Academy of Trades, as suggested by X. Greffe for France, reply to the expectations of workers who would no longer be exclusively dependent on enterprises to confirm their abilities and competences.

The Dutch national report analyzed in the Netherlands clearly positions the problem whilst stressing that multi-skilling acquired at work within an enterprise can translate into such highly specific knowledge and skills that they would not be suitable for use outside the enterprise in which they have been acquired. Some people say that non-transferability is the most likely situation since the knowledge acquired in the enterprise is bound to be specific. Evidence of this increased heterogeneity and this restrictive transferability can be found in the development of internal labour markets, in the discussions of the importance of a life-long contract, and the involution of external occupational markets.

5.6 THE COMBINATION OF DISCREET AND EXPLICIT TRAINING

So far we have addressed the problems from the angle of the dichotomy between discreet training and explicit training. Clearly the borders are less clear, many combinations are possible. On the one hand national conditions (both in initial and continuing training) more or less make necessary use of one or the other kinds of training. Thus, the "school-based" tradition in Latin countries give priority to the formalization of continuing training. This trend is reinforced when there are national provisions to encourage continuing vocational training, possibly supported by large public training bodies (Belgium, France, Spain). Inversely, the learning tradition, with all that implies in respect of the area outlined to that end within work organization can encourage the development of discreet forms of continuing training.

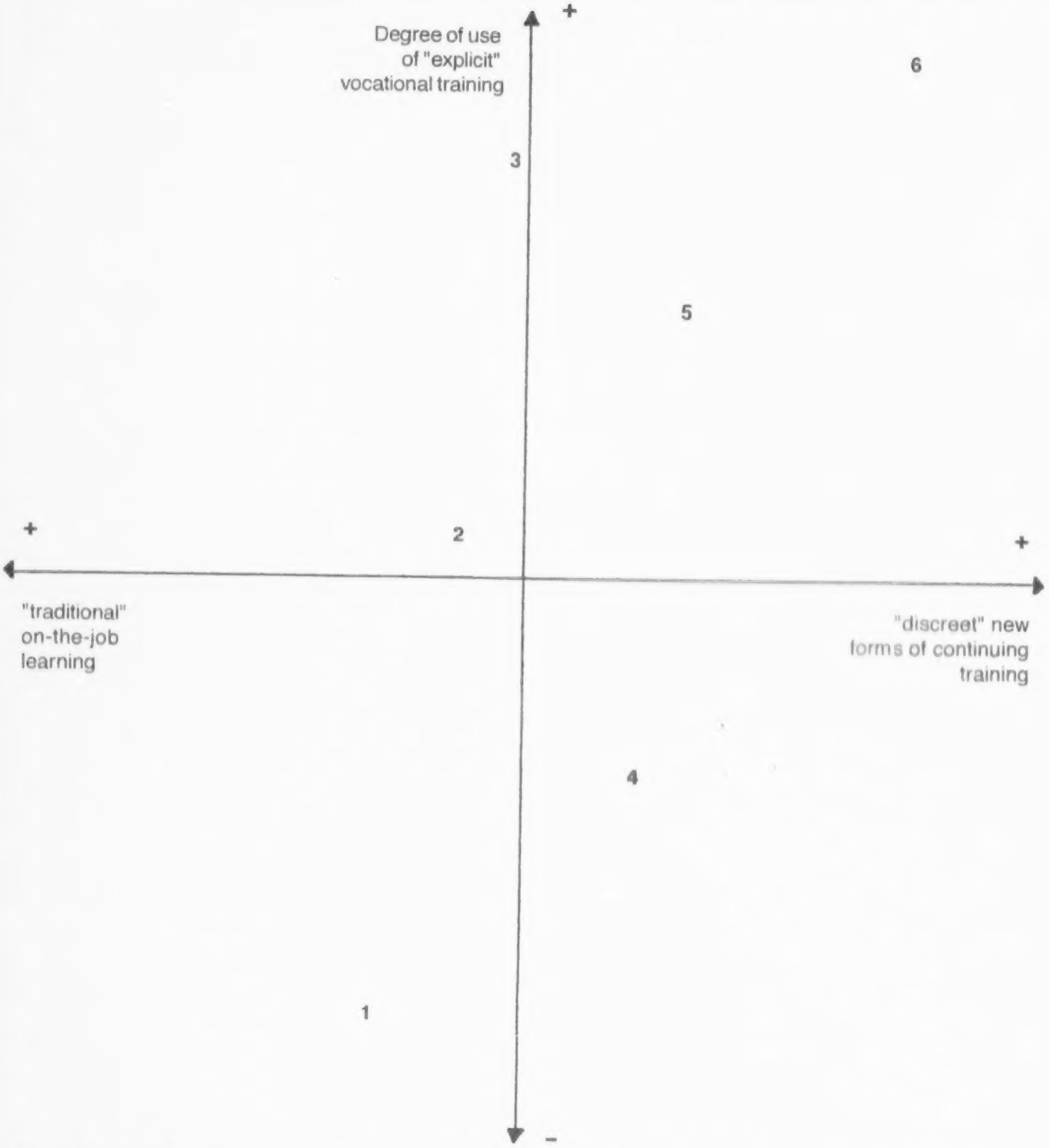
But consideration must also be given to internal movements within each of the categories. Individualization of "formal" continuing training, the use of various forms of assisted instruction, self-training forge links with discreet forms by authorizing types of learning which are closer to the workplace. Inversely, we have seen that discreet forms could progressively become formalized (e.g. in the time specifically earmarked for training within the work team) in such a way that demands in respect of more abstract know-how increase, that we move from learning to imitation with a view to producing routine skills or skills adapted to more innovative know-how.

The graph on page 81 aims to put together the various dimensions of training policies in these new forms of organization. The horizontal axe characteristic of discreet training sets, in the west, classical forms (traditional on-the-job learning, oriented towards gestures, reproduction) against the new forms of discreet training in the east which take in the more general and theoretical dimensions, mixing know-how of the trade and managerial and communicational skills. On the south-north axis, is positioned the more or less intense use of explicit continuing training.

Set 1 is characteristic of traditional enterprises in which a "journeyman" type of learning prevails without recourse to continuing training.

Set 2 is that of organizations with Taylorist production types. As a general rule, learning (in the above sense) is on the decline and is being replaced by rapid exposure to the work situation after a few days of discreet training in the form of imitation.

Set 3 is characteristic of the development in large French enterprises and also in a certain number of Spanish enterprises: a clear increase in continuing training along highly formalized lines often borrowing from the school-based form without work organization opening up significant areas for discreet forms of training.


+
Degree of use of "explicit" vocational training
6
3
5
+
2
+
"traditional" on-the-job learning
"discreet" new forms of continuing training
4
1
–

Set 4 is significant of new organizations in which there is an open attitude for new discreet forms. These discreet forms serve as a support not only to the transfer of adaptational skills but also to the acquisition of skills and know-how based on innovative behaviour. Here discreet forms are a substitute for more formalized forms which have not developed widely.

On the basis of set 4 we could put together a fifth set in which there are explicit forms of continuing training but which are still relatively juxtapositioned to discreet forms without the overall process being designed as a truly articulated learning scheme. Finally set 6 covers the situations in which discreet and explicit training forms are very developed and draw on a global didactic concept.

Let us illustrate this situation by taking some examples from our cases and by focusing on the passage.

E1 could constitute the passage from 1 to 2: a traditional form of organization in which the knowledge of a trade constitutes an important proportion to a more in-depth division of labour and to more automated mass production. The learning potential is lost without formalized continuing vocational training developing on a significant scale.

The company, F1, constitutes a movement in the opposite direction. Formerly based on traditional apprenticeship, the skills of the trade are becoming lost. F1 moved from 1 to 2. The demands of a progressive market undergoing profound change mean perfect mastery of the former operating modes. To this is added a need for very rapid innovation in terms of models, and the group managerial skills to be developed within the team, an ability to deal with incidents. After having tried out external continuing training (group 3), F1 set up internal training cells, real mini-workshops, with training staff. In the long-term these training cells should develop into a real in-company school. However, use of other forms of continuing training is still limited. F1 mainly now belongs to group 4, although it may be moving towards 5.

The company, DK2 belongs, in the beginning, to group 2: unskilled female fitters work on the assembly line; there is rapid induction to the workplace; there is scarcely any explicit continuing training. The steps taken to accommodate organizational change move via the implementation of four phases (made to measure, but in a training institution) for all female fitters, supplemented possibly by some other courses. DK2 is moving from 2 to 3. However, the acceleration in change, full switch to independent teams, just-in-time and ISO certification lead to the progressive abandoning of the practical training system (full training curriculum for female fitters and technicians) and a move towards a relatively interlinked mixture of instruction and training. DK3 is now situated between 5 and 6.

The company, P2 belongs to group 2: unskilled female fitters, fragmented tasks, little continuing training. Organizational change is accompanied by an extensive training plan. Practical training lasting 200 hours must be offered to all female fitters. This also covers general training, technical training, communication modules, awareness of quality control. All this is done within the enterprise, drawing on a pool of trainers, trained to this end, and backed by some external trainers. However, beyond this phase of using training to mobilize staff, which has led to mixed results, the capacity of new organization to support a process of self-maintenance of training is challenged. P2 has moved from 2 to 3.

In the beginning, the company, F8 was in a similar situation but it already had a relatively structured training plan (in 3). The setting up of independent units, with a reduction in functional services, just-in-time and systematic multi-skilling are undertaken by means of discreet training (learning by doubling up for each workplace), complemented by more abstract forms (mini-instruction, problem solving time with technicians). The amount of work time dedicated to training in the workshop becomes significant. But it is also supplemented by a significant number of practical training courses. The average training expectation per staff member has risen to forty hours. However, no link has been established between the acquisition aimed at in explicit and discreet training. There is no overall didactic project nor the drawing of conclusions on the basis of one type of training which could be applied to another. F8 has moved from 3 to a position between 5 and 6.

The company, DK3 has mainly used external training schemes in the development of its workforce. It has been able to tap the differences between institutions, the close relations with the trade unions, in order to set up a complex and high performance formalized training system. However, the apprenticeship tradition is still alive and kicking and DK3 fulfils one function in this field also by experimenting with new forms of learning for young people. The importance of internal mobility also implies a large capacity for adaptation amongst staff, supported by a collective training potential centred around the workplace. This new generation of training policy, in which there is a mixture of formalized training and discreet training, continuing training for staff, reception and training of the unemployed (for the group) and training of young people, is also undergoing change. But DK3 is moving towards group 6. The company, F7 will also be in this group. It has a formalized, highly structured continuing training policy which is based both on collective instruction in the enterprise and individual sessions in the branch. The development of organization perforce includes the need for self-training drawing on various aids earmarked to this end, frequent meetings to study one or the other problems, and tutorship to prepare individuals before they attend one or the other formalized practical training courses. Furthermore, the training "contract" envisages that after attending a practical training course, the staff member endeavours to pass on to others what he has learned. In F7 the articulation between explicit and discreet training is the prime goal of training policy.

CONCLUSIONS

CHAPTER VI – NEW TRAINING PRACTICES, TRAINING POLICY, EMPLOYMENT AND LABOUR RELATIONS POLICIES

In the preceding chapters we roughly characterized the new forms of organization, the status given to qualification, to the discreet or not discreet acquisition of know-how and skills. Via the variety of case studies, depending on the activities and the countries, we have been able to stress the importance of an approach in respect of paths: all the cases studied did not come under the one and the same path. There are various channels of development, the internal and external contradictions have an on-going effect on the scale of possible and selected solutions even where, apparently, the same type of constraint is encountered. For example, the principles of just-in-time or total quality lead to different choices from case to case and from country to country. We can also identify how organizational and training solutions affect the overall dimensions of work organization, employment systems, and the classification and salary systems. The occupational identities of the groups which make up the enterprise are experiencing profound change. The rules on which organization is based are more transversal as are those on which are based the classification systems and the labour markets, which are to a certain degree now being challenged. We should now return to the key questions which arise from these movements in respect of education and employment policies, labour relations and labour markets. To this end, we shall adopt the macro approach also used in the studies by trying to position the results of the preceding chapters vis à vis the systems and policies of training (initial and continuing), vis à vis the questions of employment and the labour market, labour relations systems and the role of the social dialogue.

6.1 THE DEVELOPMENT OF DISCREET AND EXPLICIT FORMS OF TRAINING IN THE ENTERPRISE: LINKS TO INITIAL AND CONTINUING TRAINING POLICIES

6.1.1 The issue of know-how and skills

A first conclusion can be drawn from the case studies, which varies depending upon the scale of organizational change and its societal environment. This is the twofold confirmation on the one hand of a more strategic position in respect of the challenges with regard to qualification in organizational change and, on the other hand, the role and the new potential of the enterprise in the process of generating competences.

However, this movement is not a matter of course. There is no "natural" trend directly instigated by one sided economic constraints. The Dutch report suggests three ways in which enterprises could tackle the problem:

- ■ stocks: it is the traditional approach in which skills are considered as a simple input to be adjusted at a given time to a "need". This idea is still very widespread, particularly in enterprises which are heading towards the north-east quadrant in the graph in Chapter V.

- flow: in a flexible organization it is the flexibility of the organization which makes it efficient. This implies that training is inseparable from the flows which stimulate organization and that, in the same way as other "intangible investment", it is involved in the de-construction/construction of standards and supports for organization.

- identity: here we are seeing a shift towards protagonists and groups which make up the organization whilst considering that any dynamic organization is at the same time the dynamic identity of the categories which make it up.

As stressed in this report the first, most classical, concept is widely represented. At the same time, the acceptance of the idea of stocks most often signifies a greater role for the enterprise in the constitution and maintenance of this stock through increased formal or discreet continuing training effort.

The two other, less widespread, approaches can, however, be identified in some cases which are moving towards the concept of the "skill generating organization". The goal as expressed in the French summary report is "cognitive looping" which enables those involved in organization to develop themselves whilst participating in the on-going transformation of organization by accumulating knowledge themselves. In other words, in the stock approach the individual and collective learning is to a certain extent constrained by a given organizational structure, to which learning has to be adapted. In the flow/identity approach., individual and collective training learning goes hand in hand with organizational learning. It is open to, and organically linked with, organizational learning.

In this process, we have outlined throughout Chapters IV and V the main trends for the development of know-how and skills shaped and mobilized by explicit and discreet training: vocational and technical components, communication, management.

These observations can be aligned with the characterization of worker profiles proposed by Lucie TANGUY (1991) concerning the future in France of training to CAP level. The author identified three main profiles:

- the occupational model where emphasis is on the link to the subject and the technical tools for handling complex activities not necessarily mouldable and for which the length of the learning situation is important;

- the technician profile, more oriented towards theoretical and practical skills in a process suitable for modelling (in which the emphasis is on abstract training);

- the multi-functional profile corresponding to the grouping around one and the same job of several functions which had previously been separate.

As stressed by L. TANGUY the problem is not that of the juxtaposition or coexistence of three polar models. It is rather a question here of archetype, the concrete combination of which leads to the generation of competences. Generally speaking and without wishing to underestimate the importance of the occupational profile, our cases show a mixture of the technical profile and a trend towards confirmation of the poly-functional profile. Combinations are linked to organizational choice, to the more or less declared degree of "looping" mentioned above. This is also linked to the models of trade unionism and labour relations. In countries in which trade unions are sectoral rather than professional associations and in countries in which technical and vocational training is more school based, the accent is placed far more on the technical profile; it is also easier to introduce the poly-functional profile. The traditional trade unions of the association kind tend to defend the corresponding profile. But in one and the other case, the new forms of organization risk, in the long term, rendering those claims outdated which draw unilaterally on one or the other profiles.

The outcome of this debate will also influence the structuring of internal and external labour markets, trade union strategies. The technical profile, more oriented towards speciality and broken down according to the level of certificates, can leave more room for the external labour market. The occupational profile based on training via learning, alternance between theoretical and practical training leads more logically to an activation of traditional internal markets. The poly-functional profile renews, to a certain extent, the foundations of the debate.

6.1.2 Return to initial training

In Chapter III it was stressed that, apart from some rare exceptions the level of recruitment in these cases was very low. However, we must examine the medium-term consequences of the developments observed and their possible effects, in turn, on initial training. The new demands described in Chapter III will lead to increased demand for general training and to a higher level of technical and vocational know-how. The increase in the level and the changes registered in some areas of apprenticeship in Germany, the new occupational baccalauréat in France, the efforts oriented towards the reform of initial vocational training in Spain or in Portugal, correspond relatively well to the new desired profiles for workers.

Three remarks must, however, be made.

The first has to do with the importance and the nature of the acquisition of know-how via discreet paths. It seems that in almost all cases some of the new competences are completely inseparable from the day to day pursuit of work, both in respect of equipment (difficult to reproduce in a school environment) and in the "managerial tools" or in respect of the staff who make up groups and the work collective. To a certain extent some of the competences can only be developed through and in work. However, what is transferred and acquired is not necessarily restricted to specific knowledge, to the "sleights of hand" characteristic of former forms of hands-on learning. The more discreet forms also involved the cognitive acquisition of theory, know-how, skills both general and transversal, and the reinforcement (and maintenance) of an ability to learn to learn. This probably comes from the open spaces for discreet forms in the new organization. But this also has to do with the increase in the school training level of white-collar workers in these organizations which enables them to take part in self-learning processes. To a certain extent, it is the articulation between school forms, discreet forms and explicit forms of continuing training which is in the process of changing the substance.

The second has to do with the challenges of initial training. Globally more demanding in respect of skills, the new organizations, in principle, make necessary complex recruitment profiles: general know-how (mathematics, expression), mastery of an occupational field (or a "trade"), technical knowledge (in the sense of profile 2 above) but also an ability to cope with multi-skilling. However, at the same time, we have seen that some of the competences can only be acquired in a work situation and that new areas for this learning are truly open.

Henceforth we must examine possible alternatives: either to directly produce, by linking learning levels and contents, the new profiles by way of initial vocational training or transforming (at least in some countries) the links between enterprises and the school apparatus in order to integrate into initial training curricula a new sharing of roles, by means of various forms of alternance, or finally by considering that the new profiles are characteristic of a certain vocational experience and that the potential for learning does not mean that, in their construction, we can exclude from the very beginning those who have the lowest educational level. This is what the German report says as it states that the practices are not very selective and are likely to open up occupational prospects to the least qualified. This is what is said, in theory, in some French case studies even if, given the level of unemployment, the easiest solution would be to recruit at an increasingly high level. By contrast, the Spanish report comes to somewhat negative conclusions on this point.

The third concerns the development of alternance courses which are visible in many countries as "school" models. Beyond specific forms of alternance training for young people who have dropped out, the work place offers the best scope for forms of alternance training.

6.1.3 The construction of continuing training policies: public encouragement and training forms

The consequences of this emergence of discreet forms of continuing training and their recombination in explicit forms for back-up policies and the training tissue are many.

We shall focus on three central issues.

a) The parallel increase in explicit forms and discreet forms of continuing training constitute a growing cost for many enterprises. In the case of the explicit forms there are various ways of registering this in the different countries. In others, so far, it has not been possible to put a figure on them. In the case of discreet forms one of the arguments put forward for their growth is that of their lower cost, since they are linked with productive activity, salary costs are very low. Nevertheless, the overall elements constitute a certain cost (and an investment). Now these new training strategies are far from being shared by all enterprises. Some state the risk of losing staff as the reason for restricting their involvement in training. Where training traditions are less extensive in the enterprise (particularly in countries with a prevailing school-based system) there is no automatic commitment by enterprises, little experience and little internal skills in this field. It is, therefore, by no means surprising that, in a large number of cases, public financing (national or community) is solicited and sometimes triggers internal training processes. Furthermore, financing mechanisms find it difficult to take into account the integrated forms of explicit and discreet training. The situation is often more complex because it often involves various enterprises in a network of training bodies. The Danish case is quite exemplary from this point of view. The English experience with developing regional and local authorities in the field of training gives rise to very controversial comments. It would seem that what could be called the "engineering of public intervention" should be fundamentally rethought.

b) Along the same lines, various examples stress the importance of the progressive establishment of local networks of enterprises and training institutions. This network dimension is stressed even more when some enterprises reinforce their links to suppliers or sub-contractors, when more or less formalized systems of exchange of human resources and skills develop (including, for example, the unemployed people in the Danish case) and when repercussions for training apparatus are felt. Major examples can be quoted in the case of Spain (printing and textile), in Denmark and, to a lesser degree, in France. These trends can sometimes constitute an alternative movement to the highly centralized architecture of initial and continuing training systems. However, at the same time, local experimental forms should not lead to a fragmentation of training provision, to the breakdown of transversal certification systems where these exist. It would seem from the point of view of public policies of continuing training there is also a new challenge to be faced.

c) Finally, always along the same lines, we frequently encountered the question of trainers. There was a dual trend. On the one hand, the role of "professional" trainers (in the enterprise or in training institutions) is tending to move towards the establishment of training activities which will be conducted in close interaction with other persons: they progressively become facilitators of learning processes integrated into work situations, counsellors in the decision-making process on training. On the other hand, enterprise staff, not previously involved in training processes, see themselves spending more and more time on this. There, too, there are major differences from country to country. Some have a tradition and a certain experience in the field of training of trainers in the enterprise. For others this question is new and training provision is restricted and not very well adapted to the new function of "tutors".

To sum up it could be said, referring to the conclusions of J. M. Barbier (1992), that the problem is one of a progressive switch from the informalized informal (or discreet forms of training) to the not only organized but institutionalized. During this transition, public intervention, the role of the training bodies, the density of networks with the enterprises are all very important.

6.2 CONSEQUENCES FOR EMPLOYMENT AND THE LABOUR MARKET

6.2.1 Employment and unemployment

How to position the overall analysis in the general context of unemployment which the countries studied are experiencing to varying degrees?

First of all, we should remember the observation made in Chapter III: in almost all cases, a new organizational form is introduced after or during a major reduction in the level of employment Even when this reduction is accompanied by the outsourcing of some jobs to other enterprises (by way of a network), the net balance for employment is generally negative.

A second question is that of the new potential for job creation which will bring with it new organizational forms bring with them. Only observation over a long period would enable a reliable answer to be given to that question. At all events it must be stressed that in a somewhat depressed economic context, major increases in productivity, made possible through the process of change, would encourage attempts to reduce rather than to increase staffing levels. Very few of the enterprises studied envisaged a positive development. In some activities (banks for example) there is still a feeling of overmanning. In the same way, the general tone of the macro reports is rather pessimistic. In the short-term, the choice by a growing number of enterprises of this type of model will prove negative for employment. In the medium or long-term it could certainly be argued that the improvement in their competitive position, a growing market share, particularly in exports, could lead to new recruitment. This would, however, imply that the increased shares are largely offset by the improved productivity or that another concept of the link between productivity and employment is gradually emerging.

Inversely, it is stressed how much the depressed climate on the labour market is paradoxically a promoter of change. Certainly the existence of a high level of unemployment, the possibility of easily mobilizing unskilled unemployed people or, in contrast, of recruiting at a higher level depending on needs could be a factor or immobility. However, on the other hand, when the market constraints for organizational change are strong, the threat of unemployment for people in work becomes a strong argument for accepting major change which often breaks with past social structures (e.g. the fundaments "of the trade") without, however, as we have seen, the immediate advantages being particularly clear (other than keeping a job or improving work content). An improvement in the employment situation could lead to more resistance on the part of staff. However, where change has taken place, the enterprises hope rather that this improvement, will lead to an increase in their turnover, which will enable them to manage more easily the necessary labour renewal and this without overly having to fear that the skilled workers will leave them once they have effectively mastered the training processes which will enable them, in turn, to train new recruits.

6.2.2 Exclusion

We should not conclude from the search for organizational flexibility by breaking down former barriers that this does not lead to new rigidities. Any shift in frontiers (between occupational groups, between collectives) is at the same time a redrawing of the demarcation lines. We can see this in the examples in which group work within the framework of micro workshops has been the most developed. This can prove to be a new obstacle to staff understanding by staff of the global nature of the organization.

In the same way, the construction of new norms for behavioral integration can turn out to be a source of exclusion. The demands of teamwork, competition between the groups, make necessary reaction times which only commitment and cooperation on a permanent basis can guarantee. Those who do not commit themselves to reaching the level of the team have major difficulties in integration and, very often, it is the members of a team who ask for the replacement of someone who, within the framework of work, does not meet collective expectations.

Regulation by the group of its activities, which on the one hand motivates the members, may also lead to a relatively selective system which rejects those who cannot (or will not) accept the group standards. In some cases certain categories which had their place in the production apparatus may be eliminated. We could quote the Danish example in which the new organization of the bank leaves little scope for women wishing to return to working life on a part-time basis, something they could do without difficulty before. Forms of resegmentation cannot be excluded, particularly when the looping processes (production of knowledge about the organization) are not guaranteed.

On the other hand, viewed globally, in the case studies the opportunities for discreet training and formal training are on the increase. This means that there is less discrimination in access to training and to skill development.

In the analysis of all the case studies and even if we know that this training has various effects on the members of the group, we do have the impression that discreet training is less selective in respect of the learning process. The opportunities for learning, including those of people with the most difficulty, are greater in the case of discreet training than in explicit training in which the forms of selection are more reinforced. By contrast, they may shift the basis of selection by way of the processes of marginalization described above.

Thus it seems that new organisational forms can result in external resegmentation. To the extent that unskilled workers are made redundant or considered untrainable and where the entry requirements could rise, the risks of increased polarisation are very real on the one hand, the competent workers in skilled and stable employment and on the other the less well qualified who are either unemployed or in unstable employment.

6.2.3 Contradictions in the restructuring of internal markets

By accepting, for reasons of simplification, the polar opposition between the internal labour markets on a professional basis (of the German kind, even if certification is transversal) and markets oriented more towards seniority (of the French kind), it must be noted that what we are seeing is a relatively extensive destablization of these two models. Apparently, the progressive introduction of criteria of "competence" in the individual and collective assessment of staff goes against the classic rules of career advancement on the basis of seniority. However, the lack of clarity on the demarcation lines between occupations raises just as many problems for the professional systems, which are not necessarily flexible. Furthermore, from one case to the other, the typical kind of internal mobility was vertical mobility implying that opportunities are open within a hierarchy of the pyramid type.

The new forms stress a leaner structure, through the drop in the unskilled and the number of supervisors. The "spinning top" seems to be gaining ground. Henceforth, if advancement opportunities within a category are greater, those for transition from one are reduced. It is not surprising that the trade unions take a negative view of these developments. For this reason many companies question current forms of classification. In Chapter III we spoke of transversal mobility which will create new careers through broadening and deepening qualifications and through uninterrupted employment even is this is no longer located on a vertical hierarchical grid.

A number of experiments have been launched. They are based on the idea of coherence rather than on structured levels. They raise the problem of evaluating individual skills and of classification criteria. This is a long-term change in the norms and rules and may result in new linkages between salary and promotion.

However, we do not have enough experience here in order to talk about a new system of mobility, all the more so because the passage from local experimentation to the transversal situation is far from being the case. Paradoxically, this could lead to a strengthening of internalization.

6.3 REVERSIBILITY, IRREVERSIBILITY OF NEW FORMS OF ORGANISATION

6.3.1 Tension between groups and the sharing of knowledge

What is important in the redistribution of knowledge is the repositioning of professional groups vis à vis each other, the losses of power of some groups, increases in the power in others. Now some groups are particularly destabilized in the wake of organizational change (see the case of supervisors above). If they are destabilized without being offered new opportunities or status, they may act as a major obstacle to any process for the transmission of knowledge and skills.

As the German research team stated, the transfer of knowledge and know-how between the members of a group will depend, to a large extent, on their acceptance of the sharing of knowledge by those who have it, and on the existence or non-existence of the spirit of cooperation. Now cooperation is by no means automatic and the risks of "marginalization" within the group, even between groups and others, are considerable.

The creation of groups and the shortening of hierarchical lines calls for a redefinition of the tasks of each group and the role of the members of the group, the definition of new identities, the creation of new organizational, decision making and communication spaces and the strengthening of cooperation between members of the group. This is not always the case, as has been seen in the enterprise for the production of hearing aids (Denmark) where the initial dynamics in organizational change were, to a certain extent, broken during the study given the pressure of competition between individuals and groups, competition which the new organization was not able to cope with.

Amongst the conditions for building an educational environment in a work situation, cooperation between the members of the team seems to be an essential component. As stressed by one of the French research teams, cooperation is always based on a system of competition and rivalry which causes problems. As far as individual motivation is concerned, the enterprises always hesitate between using two fundamental production sources in labour investment: cooperation and competition. Furthermore, the development of cooperation in some zones normally affects the development of competition between others.

On the other hand, paradoxically, as stressed by the Danish research team, it could be said that without individualization, without differentiation between individuals, cooperation, which is also the recognition of individuality, of the roles of individuals would not be possible. Sometimes the individualization of training paths leads to an extreme individualization of skills which could act as a brake on the interchangeability of the members of the group.

Individual and group commitment seems to be a precondition for the success of the system. The way in which the question of inducing this commitment in a system no longer offering traditional rewards in terms of salary and vertical promotion is raised in different ways from country to country. In Denmark, for example, the existence of a large network of technical schools on a local level encourages a favourable attitude to the break with traditional career structure. Furthermore, the specific trade union structure (skilled, unskilled) does not constitute an obstacle to mobility, to the mixing of groups, individuals with different competences. But if a compromise cannot be achieved between the distances and proximities between staff, group work is unlikely. If cooperation is to be possible, there must be a basis for discussion, a common language. If the distances between identity profiles are overly large, this can block the learning process.

On the other hand, some case studies show the negative consequences of profiles which are too homogenous and too flat in nature. The lack of tensions between occupational groups and the lack of career prospects hinder the inherent dynamism between cooperation and competition.

6.3.2 The role of managers and supervisors

The restructuring of tasks also leads to resistance from managerial staff and from a whole series of ancillary production services. However, the new forms of work organization affect even more the functions of management and command, particularly when changing the relations between workplaces or work groups by setting up quasi-client or quasi-supplier relations. In the work circuit every member or every work group often assumes two roles: that of the client and that of the supplier. Even if they all work for the same boss, each member of the enterprise is working for one or more worker-clients. These designations of worker-clients and worker-suppliers are not without significance: They introduce a kind of commercial situation between operators within the enterprise.

Following this kind of development, management and control tasks, be they of the worker or in respect of work quality, dwindle to the point that they provoke the shedding of managers and thus increase their resistance to change.

Supervisors often make up an unstable group given that they witness a major restructuring of their roles and their functions without being prepared for their new functions. Now, even within the framework of new organization, the role of managers in the transfer of know-how and in the development of groups is essential.

Even if some managers feel threatened by the new enhanced forms of work, this is by no means a real danger to the extent that their tasks or roles can develop favourably. Thus, for example, the foreman could become a group facilitator, a tutor or a developer of human resources. He may even be elected to this post rather than nominated by his superiors. On the whole the manager seems to be moving towards technical support for operators, assistance in the management of tools and production and also support for those who have to be accompanied if not guided in training. Managers also have a larger role in facilitation and communication between or in the groups. This is the direction of change observed in many case studies but it is true that we do not always know the scale of labour cut-backs which have preceded or accompanied the introduction of new forms of work organization.

6.3.3 Towards skill generating organizations

Taking as the basis the various reports mentioned, we can examine what factors could be used to identify "productive skill generating situations or units", "skill generating work processes" and on the basis of which characteristics it can be said that "the new forms of work organization and enterprises are skill generating".

The first question is certainly whether work is not always a skill generating process because it inevitably involves forms of learning, trial and error, success and failure. Each activity requires knowledge and competences, be it the handling of materials, the processing of pictographs and documents, the handling of tools, the driving of machinery or the use of equipment, the assimilation and implementation of standards and codes of conduct or behaviour which are necessary in the relations with other workers, suppliers, clients or even with the junior and senior managers of the enterprises.

Each activity is therefore a training activity because it implies, technical, analytical, cognitive and relational skills (R. Jacob, 1993, p. 33), an ability to concentrate and memorize data, observation and diagnostic skills, and a capacity to interact with the environment (J.-L. Laville, 1993, p. 33). In this research the problem is rather to identify whether some forms of work and organization are more skill generating than others and to identify the characteristics of these skill generating forms.
From this point of view, the German report, presents five concepts in the form of descriptive and structural categories which characterize skill generating production units. Thus, it places in apposition:

- innovation versus repetition
- flexibility (multi-skilling) versus assignment of tasks
- horizontalization versus verticalization
- work in network versus individual jobs
- participation versus strict imposition of tasks

The French report, whilst distancing itself from the concept of the skill developing enterprise, does however estimate that the organization has "a training impact" when there is complex interaction between organizational change and change in the make-up and transmission of knowledge. The skill developing organization has to instil in workers a capacity for change. Moreover, the organization can only generate skills if it develops and succeeds in involving staff. In order to be functional the skill developing organization must be linked with individual and collective involvement and active participation.

"In order to be skill developing, an organization must be capable of developing cognitive routines and strategies, of recognizing individual and collective production of new knowledge and behaviour at work within the framework of encouraging the participation of staff in decision making processes". "The skill developing organization" is defined "as the organization which permits the development of collective intelligence and the ability of staff to act both individually and collectively as agents of change". (French national report, p. 33).

In the wake of the French report, the Portuguese report considers that an organization is skill developing when it opens up opportunities to enhance recognition of the workers: in other words, by means of his work he can increase his skills and thus improve his remuneration on the labour market. The production of skills in the enterprise should, therefore, be evaluated, from the workers' angle, by the value in terms of money on the

BEST COPY AVAILABLE

labour market of knowledge and competences acquired by the worker: this in fact implies their certification. This takes us into another dimension: the criteria of "skill developing" organization is based on the results certified for the individual.

The introduction of new forms of work organization and enterprise does not necessarily mean that enterprises are skill generating. Everything depends on the changes made, not only in the short-term, and the frequency with which operators have to find solutions both in the short-term and the long-term. Hence the need to recognize whether this newly acquired know-how, which is used in the new organization of work, is simply adaptational or innovative (Portugal, national report, p. 24). In the long-term work organization will be more skill generating when workers have to cope, in a continuous or recurring fashion, with new situations in which they have to resolve new problems be they technical, occupational or relational in nature.

Along the same lines, the Belgian report talks about the "exploratory moment" which in work is intermingled with two other moments: the "programming" moment which describes the tasks to be accomplished and the functions to be assumed and the "operating" moment which describes how this is to be done. As far as the exploratory moment is concerned it appears "in the search for solutions prompted by the appearance of an unexpected problem (material or non-material) or by the appearance of a new situation". During this moment, a process of reflection and experimentation is triggered without this necessarily leading to the accumulation of knowledge. By contrast, it may promote the de-construction and devaluation of knowledge, involving a de-learning process without which a new learning situation does not seem possible. The enterprise becomes "reflective" when it commits staff to processes of this kind (G. BRUNI, in J.P. DURAND, 1993, p. 204).

The exploratory moment implies the preparation by the operator(s) of a strategy moving beyond this critical incident and the regulation of the new situation. In fact when it is a matter of correcting a perturbation or replying to a "new situation", the worker explores, consults, takes risks, experiments, discovers and, in this way, develops knowledge and assimilates new reactions. This exploratory moment does not necessarily coincide with the actual emergence of the event; it may be prior to, parallel to or after it (B. FUSULIER, 1993). Contrary to the other two moments, this exploratory moment is not always part of the work sphere or work time.

The professional problems and questions could be triggered via other spheres of activity: during what we call leisure time.

In the enterprise this exploratory action implies nevertheless a field of opportunities and awareness of its existence by the individual and the group because exploration is not necessarily the task of individuals in isolation. Exploration requires time and space programmed or not, allocated to reflection,.to the search for a solution, to concrete action. In fact, it could be said that the enterprise is all the more skill generating when it offers an elevated number of exploratory moments.

6.4 THE ACTORS AND THE SOCIAL DIALOGUE

Against the background of the questions raised throughout the report, how can we position the role of representative associations of workers and the challenges in terms of the social dialogue? We shall mention here, rather in the form of a question mark, a certain number of challenges facing trade union associations in their intervention with regard to training.

6.4.1 Relative marginalization

In contrast with the demands put forward on a general level, it would seem that the trade unions are not particularly active in promoting initiatives going beyond the problems of training for workers on recruitment or training which precedes or accompanies technological and/or organizational change. So far it was most frequently the case that the European trade unions tended to leave the initiative for training beyond this dual concern to employers.

Aware of the importance of this continuing training, the trade unions undoubtedly called for reorganization of work time in order to allow workers to improve their skill level. They also demanded the partial assumption of training costs. They promoted the introduction of educational leave. They demanded openings with a view to access to training leading to a recognized qualification and to programmes of external instruction enabling workers to fill gaps in their knowledge. But so far, and with the exception of Denmark, it cannot be said that at the level of enterprises their direct involvement has been particularly high.

To the traditional characteristics of non (or weak) involvement in the field of training in countries such as France, Spain, must be added the effects of strategies of "circumvention" which we mentioned above: use of forms of "direct democracy" and circumvention policies by way of decentralization of professional negotiations, introduction of strategic plans by senior management in a context of reduced employment on which trade union demands and interventions focus.

But more fundamentally, it would seem that this has to be based in a differing manner on both the fields and levels of intervention.

6.4.2 Control and direct democracy

An entrepreneurial policy oriented towards product quality, towards reducing the costs of non-quality and towards the reliability of processes needs constant mobilization and responsibilization of operators. Against this background the problem is not of organizing efforts to overcome negative divergencies but rather of encouraging and using positive divergencies. This explains the weakening of physical and hierarchical forms of control coupled with the development of a conscience and responsibility by means of a project and a corporate culture.

New organizations play the card of direct democracy, sometimes against representative democracy which trade unions have developed by means of their delegates, staff committees and committees on safety and hygiene. By promoting the direct participation of workers in their work sites and in the enterprise by means of discussion groups and training, the enterprise takes up, directly, the problems of workers and creates in this way new areas for negotiation which are both individual and collective. It now finds itself in a position to undertake the direct management of human resources. It succeeds in this even more when trade unions are oriented towards general and collective demands. The transversal groups, above all of the trans-hierarchical type, give the enterprise an opportunity to reinvolve management in dealing with human problems instead of a system of trade union demands. The trade union path is, thus, in competition with a hierarchical path in solving the problems at work and of workers. This is even more the case as the trade unions are still bogged down in class consciousness and seem even less able to cope with the concrete problems encountered in the enterprises.

By means of various new policies the enterprise gradually convinces workers of the importance of consensus, of their strategic responsibility for the quality of work and the product in satisfying consumers or users and in the pursuit of the essential prosperity of the enterprise. The managerial philosophy which spreads through the enterprise aims to create a team spirit and to develop a sense of belonging. New forms of work organization can only be successful if the workers are sufficiently convinced of the convergence and complementarity of the interests of capital and labour: without this conviction participation would simply be an empty concept.

What we see emerging is what some people call forms of secondary control: control which operates on the basis of the conscience and responsibility and which is, therefore, very different from primary control to be found in an enterprise based on the routine division of labour. Today it is no longer work but participation which seems to be the constraint, even if it is presented on a voluntary basis. It even means that in workers there is a feeling that non-participation or non-contribution to the groups in the enterprise within or between the units will in one way or another be punished, along the lines of negative divergency.

Principally in industrial enterprises, the culture project interferes with the worker culture, with the conscience and the idea of the class struggle. The new attachment of workers to the enterprise encourages trade union organization to cultivate a vision based on consensus rather than conflict. It encourages them to become a trade union for proposal rather than for combat and simple control. Gradually, in this new climate, global and sectoral negotiation take the place of trade unionism in the enterprise and are replaced by corporate rather than by trade union activities to the extent that they move away from the dictates of global solidarity.

6.4.3 New spaces and desegmentation in training negotiations

The growing involvement of training questions in work organization, mobility, but also the unclear situation governing, at present, the construction of new classification or salary rules must lead to a "desegmentation" in the training debate.

In the past, trade union organizations developed a whole range of demands concerning equal opportunities in access to initial or continuing training, in the right to vocational training throughout working life, particularly against the background of job security. As far as on-the-job training of staff is concerned, they called for a fair distribution of training between the various categories, and a full assumption by the enterprise of training during working hours.

Some of the main themes common to most European trade unions can be summed up as follows: egalitarian as opposed to a meritocratic vision, second chance, individual and collective right to training leading to a recognized qualification, establishing a link with the classification and salary. It is not a matter of saying that these demands are antiquated. It is a matter of demonstrating how some new challenges are in the process of emerging which are also challenges for trade unions.

a) The more explicit link between work organization and training leads to upstream investigation of the construction of new organizational forms, and of the provision of training activities within that framework. Now, in many cases studied, trade union organizations are by tradition involved very little in the concrete debate on work organization. This is either because from the very outset this area has been reserved for management or because these organizations refuse any involvement which would be tantamount to a kind of "co-management" perhaps going as far as the selection of staff. This relative exteriority is indeed a strong obstacle to attention to problems of training which emerge immediately in the processes of setting up organizational forms.

b) The development of individualization practices mentioned in Chapter IV, the direct assumption by the enterprise of the selection of trainees but also the subtle interplay in respect of the voluntary nature of training make it difficult to conduct a discussion of principle or "ex-post" on equal rights and access to training. There is a need for a highly tuned approach, also by the trade unions, in order to implement this individual "right" to training.

c) The emergence of discreet training forms renews the foundations for the debate: the duration of "learning" will not be enough to reflect the skills acquired. We, therefore, have to examine the forms of transmission of know-how and skills during work, which cannot be easily done without launching the debate on the "contents of training" (discreet and explicit). Now in many countries, this debate is not undertaken by the trade union organization (except possibly on the national level as far as the definition of school certificates is concerned). This challenge is all the greater when the tools for the analysis of work situations and training content are little known.

d) The shift in training objectives towards goals of more immediate value to the enterprise, and the difficulties mentioned in Chapter IV in respect of certification, also raise new challenges in terms of trade union organization. Traditionally they were strictly utilitarian, in favour of relatively large scale and certified training. This line is all the more difficult to maintain under the pressure of unemployment. The awareness of salaried staff about the "employment" side to training encourages them to accept, more easily, training proposals based on obviously more narrow but more finalized contents.

e) The processes of individualization, the elaboration of training plans, access to training, links between training, career and salary also raise major issues. General rules valid beforehand were to a certain extent guides for trade union action. They have now been destroyed or circumvented. The creation of competition amongst individuals, on apparently more legitimate grounds (since this is based on "objective" criteria of training, qualification) often challenge the trade union stance based on universal criteria (e.g. seniority) and collective criteria.

6.4.4 Pertinent levels for negotiation

A last set of challenges stems from the shifts in the pertinent levels of negotiation, as well as in what sometimes makes up the very structure of trade union organizations.

Throughout Chapters IV and V we have pointed out a set of shifts in levels on which challenges to training are to be found: shifts towards the workshop, towards working in independent groups, involvement of discreet training and explicit training, individualization, outsourcing, in some countries with the trend to set up local networks, with the "territorialization" of training. In most cases these shifts directly affect the pertinent levels for the social debate on training. Thus in France the two traditional levels of discussion, staff enterprise and national level, are caught in a vice. A similar observation could be made for Spain. It would seem that Denmark has the most extensive tradition for discussion on a local level and is able to find an answer to the shift described above without too many difficulties.

But, more fundamentally, it is often in many cases the very foundations of trade unionism which may be challenged. In countries where there is a tradition of a trade union for each occupation, the blows inflicted on this tradition have been major. The restructuring which emphasises multi-skilling, multi-functionality, which render unclear the borders to the occupations, destabilize the trade union structures. Wherever trade unionism is based on skill criteria, as in Denmark, we can see how the shift in the question of the unskilled redefines the issue of the borders between organizations, and may give rise to territorial conflicts. It is not surprising, under these conditions, that the trade union approach to training questions becomes relatively delicate. The practices of work organization and training touch on the very principles on which these organizations are founded.

ANNEX

THE ROLE OF THE COMPANY IN GENERATING SKILLS: THE LEARNING EFFECTS OF WORK ORGANIZATION

National reports:

- GERMANY
  Uwe Grunewald, Edgar Sauter, Gerhard Zimmer
- BELGIUM
  Pol Debaty, Jacques Delcourt, Bernard Fusulier, Christian Maroy, Marie-Pierre Seron, Claudine Tilkin
- DENMARK
  Peer Hull Kristensen, James Høpner Petersen
- SPAIN
  Maribel Garcia Gracia, Antonio Martin Artiles, Jordi Planas Coll
- FRANCE
  Khaled Bouabdallah, Louis Mallet, Marie-Claire Villeval, Philippe Méhaut
- ITALY
  Francesco Muscella, Luida Ribolzi, Umberto Vairetti
- THE NETHERLANDS
  Jeroen Onstenk, Eva Voncker
- PORTUGAL
  Helena Lopes, Maria João Rodrigues
- UNITED KINGDOM
  Andy Green, Hillary Steedman, Kenneth Wals

BIBLIOGRAPY

ALALUF Matéo, "Qualification: peut-on distinguer les classements techniques des classements socialux?", Problèmes économiques, N° 2.294, 7 octobre 1992, pp. 22-25.

ALTER Norbert, La gestion du désordre en entreprise, L'Harmattan, Logiques sociales, Paris 1990, 203 p.

ALTER Norbert, "La crise structurelle des organisations", Sociologie du travail, N° 1, 1993, pp.75-87.

AMIN A, K. ROBINS, "The re-emergence of regional economies? The mythical geography of flexible accumulation", Environment and Planning D, Society and Space, Vol. 8, 1990, pp. 7-34.

ANSOFF H.I., in J.- Cl. Scheid, Les auteurs en organisation, Modules économiques, Dunod, Paris 1980, pp. 154-166.

AOKI Masahiko, "Toward an Economic Model of the Japanese Firm, The Journal of Economic Literature, Vol. 28, N° 1, March 1990, pp. 1-27.

AUBERT Nicole et Vincent de GAULEJAC, Le coût de l'excellence, Seuil, Paris 1991, 341 p.

AUSTRIN Terry, "Flexibility, Surveillance and Hype in New Zealand Financial Retailing" Work, Employment and Society, Vol 5, N° 2, June 1991, pp.201-221.

AUTREMENT, Le culte de l'entreprise, Paris 1993, 256 p.

AVIS James, "Post-fordism, Curriculum Modernisers and Radical Practice: the case of vocational education and training in England",
The Vocational Aspect of Education, Vol. 45, N° 1, 1993, pp. 3-14.

BADHAM R, J. MATTHEWS, "The New Production System Debate", Labour and Industry, Vol. 2, N° 2, 1989, pp. 194-246.

BARBIER Jean-Marie, "La recherche de nouvelles formes de formation par et dans les situations de travail", Education permanente, N° 112, octobre 1992, pp. 125-146.

BAUDOUIN Jean-Michel, Pierre-Marie MESNIER et Edmée OLLAGNIER, Le développement des qualifications sur les lieux de travail, Ministère du travail, de l'emploi et de la formation professionnelle, Paris 1991, 207 p.

BAUDOUIN Jean-Michel et Roger HELLIET, "Les formations deplômantes dans l'entreprise: un nouveau rapport travail-formation", Education permanente, N° 112, octobre 1992, pp. 39-46.

BENGTSSON Jarl, "Human Resource Development; Education, Training and Labour Market Development", Futures, December 1991, pp. 1084-1106.

BERTON Fabienne, Mokhtar KADOURI et Edmée OLLAGNIER, "Le travail formateur?" Editorial, Education permanente, N° 113, 1993 pp. 223-230.

BERTRAND Olivier, "L'évolution des qualifications professionnelles", Futuribles, septembre 1992, pp. 3-24.

BIBES Geneviève, René MOURIAUX et al., Les syndicats europeéns a l'épreuve, Presses de la fondation Nationale des Sciences Politiques, Paris 1990, 292 p.

BLACHE Antoine, "Contribution à la connaissance de l'apprentissage européen", Actualité de la formation permanente, N° 121, 1993, pp. 86-88.

BOYER Robert, The Economics of Job Protection and Emerging Capital Labour Relations from the Perspective of Regulation Theory, CEPREMAP, N° 9130, August 1991, pp. 1-79.

BRESSAND A et K NICOLAIDIS, art. Cit. par J.-Fr. Lefèfvre-Farcy, p. 159.

BRUNSTEIN Ingrid, "Nouvelles flexibilités en France et ailleurs", Gestion, N° 126-127, 1990, pp. 73-81.

BUREAU Marie-Christine, Patrick NIVOLLE, "Modes de qualification des personnes et changements dans la production", Formation Emploi, N° 30, pp. 30-54.

CAPDEVIELLE Philippe, Frédéric HERAN, Pascal POLITANSKI, "Le rôle de la formation professionnelle dans la diffusion des technologies en Europe: des évolutions plutôt convergentes", Revue d'Economie Industrielle, Vol. 59, N° 1, pp. 174-191.

CAPRON H., S. NOBLET, "Le partenariat stratégique: types et formes d'organisation", Wallonie, CESRW, N° 20, 1992, pp. 15 -21.

CARLSSON B., "Management of Flexible Manufacturing: An International Comparison", OMEGA, International Journal of Management Sciences, Vol. 20, N° 1, pp. 11-22.

CASPAR Pierre et Jean-Guy MILLET, Apprécier et valoriser les hommes – Réflexions et pratiques, Ed. liaisons, Paris 1993, 290 p.

CHEN Ij, Rj CALANTONE and CHUNG C-H, "The Marketing-Manufacturing Interface and Manufacturing Flexibility", OMEGA, International Journal of Management Science, Vol. 19, N° 5, 1991, pp. 431-443.

CHEVAILLIER D., (Edit.) Savoir faire et pouvoir transmettre, Ed. de la maison des sciences de l'homme, Paris 1990.

CLEGG Stewart, Modern Organizations – Organization Studies in Postmodern World, Sage Publications, London 1990, 261 p.

COHENDET P., M. HOLLARD, T. MALSH et al., L'après taylorisme: nouvelles formes de rationalisation en France et en Allemagne, Economica, Paris 1988.

CORIAT Benjamin, Penser à l'envers, Travail et organisation dans l'entreprise japonaise, Ch. Bourgeois Editeur, Paris 1991, 185 p.

CORIAT Benjamin, "Post-fordisme: quelles perspectives pour l'évolution du rapport salarial, Problèmes économiques, N° 2138, 30 aout 1989, pp. 14-21.

CORIAT Benjamin, L'atelier et le robot: essai sur le Fordisme et la production de masse, Bourgeois Ed. Paris 1990, 302 p.

CUTLER Tony, "Vocational Training and British Economic Performance: a Further Instalment of the 'British Labour problem', Work, Employment and Society, Vol. 6, N° 2, June 1992, pp. 161-183.

DALLE François, Jean-François BOUNINE, L'éducation en entreprise contre le chômage des jeunes, Ed. Odile Jacob, Paris 1993, 282 p.

de TERSAC Gilbert et Pierre DUBOIS (Eds), Les nouvelles rationalisations de la production, Cepadues, Toulouse 1992, 336 p.

d'IRIBARNE Alain, La compétitivité – Défi social – Enjeu éducatif, Presses du CNRS, Paris 1989, 284 p.

d'IRIBARNE Philippe, La logique de l'honneur – Gestion des entreprises et traditions nationales, Ed. Du Seuil, Paris, (2ème éd.) Oct. 1993, 280 p.

DOLL Wj, Ma VONDEREMBSE, "The Evolution of Manufacturing Systems: Towards the Post-Industrial Enterprise, OMEGA-International Journal of Management Science, Vol. 19, N° 5, 1991 pp. 401-411.

DUBAR Claude, La socialisation: construction des identités sociales et professionnelles, Armand Colin, Paris 1991, 274 p.

du GAY Paul, Graeme SALAMAN, "The Culture of the Customer", Journal of Management Studies, Vol. 29, N° 5, 1992, pp. 615-633.

DUPONT Georges et Fernanda REIS, Enquête sur la formation continue dans les grandes entreprises, CEDEFOP, Office des publications officielles de la CEE, Luxembourg 1991, 67 p.

DURAND Jean-Pierre, "Italie: spécialisation flexible et dépassement du fordisme, Revue d'Economie Industrielle, Vol. 58, N° 4, 1991, pp. 47-65.

DURAND Jean-Pierre et al., Vers un nouveau modèle productif, Syros – Alternatives, Paris 1993, 317 p.

ECONOMIES ET SOCIETES, La firme et la dynamique de l'apprentissage, Pug, Grenoble, N° 5, 1993, 221 p.

ETTIGHOFFER Denis, L'entreprise virtuelle ou les nouveaux modes de travail, Ed. Odile Jacob, Paris 1992, 341 p.

EYRAUD FreanAois, David MARSDEN et Jean-Jacques SYLVESTRE, Marché professionnel et marché interne du travail en Grande Bretagne et en france, Revue internationale du travail, Vol. 129, N° 4, 1990, pp. 551-569.

FHARI Stéphane, "Le juste-à-temps: comment les entreprises s'adaptent-elles aux à-coups de la demande", Problèmes économiques, N° 2235, 24 juillet 1991, pp. 17-20.

FREEMAN C., "Technologies nouvelles, cycles économiques longs et avenir de l'emploi", in J.-J. Salomon et G. Schmeder, Les enjeux du changement technique, Economica, Paris 1986.

FREYSSENET Michel, "Processus et formes sociales d'automatisation – Le paradigme sociologique", Sociologie du travail, N° 4, 1992, pp. 469-496.

FULLER Linda, Vicky SMITH, "Consumers' Reports: Management by Customers in a Consuming Economy", Work, Employment and Society, Vol. 5, N° 1, March 1991, pp. 1-16.

GADREY Jean, "Pour une nouvelle régulation des rapports sociaux dans le secteur des services", Revue économique, N° 41-1, janvier 1990, pp. 49-69.

GEHIN Paul et Philippe MEHAUT, Apprentissage ou formation continue? Stratégies éducatives des entreprises en Allemagne et en France, l'Harmattan, Paris 1993, 223 p.

GILDER G., Richesse et pauvreté, Albin Michel, Paris 1981.

GREEN Francis, "On the Political Economy of Skill in the Advanced Industrial Countries", Review of Political Economy, N° 44., 1992, pp. 413-435.

GREFFE Xavier, Sociétes postindustrielles et redéveloppement, Hachette, Paris 1992, 304 p.

GUILLOUX Patrick, "Reconnaissance des acquis de formation validés par les branches ou les entreprises", Actualité de la Formation Permanente, N°121, 1993, pp. 39-47.

HAGE Jerald, Charles POWERS, Post-Industrial Lives – Roles and Relationships in the 21st Centrury, Sage Publications, London 1992, 248 p.

HAYES Robert H., Steven C. WHEELWRIGHT, Kim B. CLARK, Dynamic Manufacturing – Crating the Learning Organization, Collier MacMillan, London 1988, 374 p.

HIRST Paul, Jonathan ZEITLIN, "Flexible Specialization versus Post-Fordism: Theory, Evidence and Policy", Economy and Society, Vol. 20, N° 1, February, 1991. pp. 1-43.

HODSON Randy, Gregory HOOKS et Sabine RIEBLE, "Customized Training in the Workplace", Work and Occupations, Vol. 19, N° 3, August 1992, pp. 272-292.

HORMAN Denis, "Syndicalisme et management participatif", CRISP, Courrier hebdomadaire, N° 1342-1343, 1991, pp. 1-47.

HOWELL Chris, "The Dilemmas of Post-Fordism: Socialists, Flexibility, and Labor Market Deregulation in France", Politics and Society, Vol. 20, N° 1, March 1992, pp. 71 -99.

HUDSON R., "Labour-market changes and New forms of work in old industrial regions: maybe flexibility for some but not flexible accumulation, Environment and Planning D, Society and Space, Vol. 7, 1989, pp. 5-30.

JACOB Réal, "Flexibilité organisationnelle et gestion des ressources humaines", Gestion, mai 1993, pp. 30-38.

JACOT J.H. et al., Du fordisme au toyotisme – Les voies de la modernisation du système automobile en France et au Japon, Problèmes économiques, La documentation Française, N° 7-8, FÉVRIER 1990, 438 p.

KERN H et M. SCHUMANN, La fin de la division du travail, Maison des sciences de l'homme, Paris 1989.

KUPERHOLC J. et A. MOR, Développer de nouvelles formes de formation: les systèmes flexibles, Edition Liaisons, Paris 1993, 158 p.

LACOSTE Michèle, "Changement dans l'entreprise et collectifs informels d'apprentissage", Education permanente, N° 112, octobre 1992, pp. 87-94.

LANDIER Hubert, Vers l'entreprise intelligente, Calmann-Lévy, Paris 1991, 294 p.

LAVILLE Jean-Louis, "Participation des salariés et travail productif", Sociologie du travail, N° 1, 1993, pp. 27-47.

LE BAS Christian, "La firme et la nature de l'apprentissage", in Economies et Sociétés, Série Dynamique technologique et organisation, N° 1/5, 1993, pp. 7-24.

LEBORGNE Danièle et Alain LIPIETZ, Fallacies and Open Issues about Post-Fordism, CEPREMAP, N° 9009, 33 p.

LE BOUEDEC G., Les défis de la formation continue – Développement personnel ou développement professionnel, L'Harmattan, Paris 1988, 278 p.

LEGRAIN Edouard et al., Mirages de l'après Fordisme, Contradictions N° 69/70, L'Harmattan, Paris 1992, 222 p.

LEVY-LEBOYER Claude, Le bilan de compétences, Les Editions d'Organisation, Paris 1993, 119 p.

LINHART Danièle, Les Torticolis de l'autruche – L'éternelle modernisation des entreprises françaises, Sociologie, Seuil, Paris 1991, 250 p.

LINHART Danièle, "A propos du post-taylorisme", Sociologie du travail, N° 1, 1993, pp. 63-74.

LINHART D. et J. PERRICAULT, Le travail en puces, PUF, Nouvelle Encyclopédie Diderot, Paris 1992.

LORINO Philippe, "Le contrat 'saturnien' un nouveau pacte social dans l'entreprise", Problèmes économiques, N° 2251, 27 novembre 1991, pp. 17-19.

LOUBET Daniel, Le management des savoirs-faire de l'entreprise, Les Editions d'organisation, Pris 1992, 147 p.

LOVERING John, "Fordism Unknown Successor: a Comment on Scott's Theory of Flexible Accumulation and the Re-emergence of Regional Economies, International Journal of Urban and Regional Research, Vol. 14, N° 1, March 1990, pp. 159-174.

LOVERING John, "Theorizing Post-Fordism: Why Contingency matters (a further response to Scott), International Journal of Urban and Regional Research, Vol 15, N° 1, 1991, pp. 298-301.

LUTTRINGER, J.-M., Le droit de la formation continue, Dalloz, Paris 1986, 379 p.

LYLES Marjorie L., Charles R. SCHWENK, "Top Management, Strategy and Organizational Knowledge Structures", Journal of Management Studies, Vol 29, N° 2, March 1992, pp. 155-174.

MADELIN Philippe et Dominique THIERRY, "Organisations qualifiantes: quelle définition et quelle méthode d'évaluation?", Education permanente, N° 112, octobre 1992, pp. 23-30.

MAHNKOPF Birgit, A Modernization Approach of German Trade Unions: Further Training through Collective Bargaining, Wissenschaftszentrum Berlin für Sozialforschung, Discussion Papers FS I 91-2, August 1991, 125 p.

MALLET Louis, Gestion prévisionnelle de l'emploi, Ed. liaisons, Paris 1991, 200 p.

MAROY Christian, Changements organisationnels et stratégies de formation des entreprises, Institut des Sciences du Travail, Louvain-la-Neuve, septembre 1991, 53 p.

MAURICE Marc, F. EYRAUD, A. d'IRIBARNE et F. RYCHENER, Des entreprises en mutation dans la crise. Apprentissage et émergence de nouveaux acteurs, Rapport Lest, Aix-en Provence 1987.

MAURICE Marc, "L'effet formateur' de l'organisation du travail", Problèmes économiques, La Documentation française, N° 2045, 21 octobre 1987, pp. 27-32.

MAURICE Marc, "Les nouveaux modèles productifs entre 'taylorisme' et 'toyotisme'", Sociologie du travail, N° 1, 1993, pp. 89-98.

MEHAUT Philippe, Vers un nouveau rapport de l'entreprise à la formation, Production et usage de la formation par et dans l'entreprise, GREE-CNRS, Nancy, octobre 1989, 28 p.

MICHEL Sandra, Sens et contresens des bilans de compétences, Editions Liaisons, Paris 1993, 160 p.

MEJABI Olubenga, Gary S. WASSERMAN, "Basic Concepts of JIT Modelling", International of Production Research, Vol. 30, N° 1, 1992, pp. 141-149.

MERCURE Daniel, Ed. La culture en mouvement – Nouvelles valeurs et organisations, Les Presses de l'Université de Laval, Sainte-Foy 1992, 312 p.

MOULAERT F., E. A. SWYNGEDOUW, "A Regulation Approach to the Geography of Flexible Production Systems', Environment and Planning D, Society and Space, Vol. 7, 1989, pp. 327-345.

NIKOLAJEV Vadim, "The New Technologial Paradigm of Intelligence-based Production-Global Challenges", Futures, October 1991, pp. 828-848.

NONAKA Ikujiro, "The knowledge Creating Company", Harvard Business Review, November-December 1991, pp. 96-104.

NYHAN Barry, Promouvoir l'aptitude à l'autoformation, Perspectives européennes sur la formation et le changement technologique, Presses Interuniversitaires Européenes, Bruxelles 1991, 200 p.

OLIVER N. et B. WILKINSON, "Japanese Manufacturing Techniques and Personnel and Industrial Relations in Britain: Evidence and Implications", British Journal of Industrial Relations, Vol 27, N° 1, March 1989, pp.

PAIN Abraham, Evaluer les actions de formation, Les Ed. d'Organisation, Paris 1992, 135 p.

PARADEISE Catherine, "Des savoirs aux compétences: qualification et régulation des marchés du travail", Sociologie du travail, N° 1, 1987, pp. 35-47.

PARAPONARIS Claude, "Quelles pratiques organisationnelles pour la gestion de production en flux tendus?", Economies et Sociétés, Serie Sciences de gestion, N° 17, avril 1991, pp 137-158.

PAVITT K., "Sectoral patterns of technical change: towards a taxonomy and a theory, Research Policy, N° 13, 1984, in RÈgis LARUE de TOURNEMINE, Stratégies technologiques et processus d'innovation, Les Editions d'organisation, Paris 1991, pp. 217-218.

PERETTI J.-M., Gestion des ressources humaines, Vuibert Entreprise, Paris 1987, 268 p.

PERRET Bernard et Guy ROUSTANG, "L'économie contre la société", Esprit, février 1993, pp. 124-131.

PERULLI Paolo, "Towards a Regionalization of Industrial Relations", International Journal of Urban and Regional Research, Vol. 17, N° 1, 1993, pp. 98-113.

PEYRARD C., "La production de connaissances dans l'activité de travail", Bref CEREQ, N° 62.

PIRDAS Joceline, "Implication des travailleurs et relations industrielles – Un aperçu des debats britanniques", Cahier orange N° 37, Institut des Sciences du Travail, mai 1992, 69 p.

RAINBIRD Helen, Union Perspectives on Industrial Restructuring and Training, Basil Blackwell, Oxford 1990, 188 p.

RAINBIRD Helen, British Trade Unions and the Possibility of a Skill-Oriented Modernisation Strategy in a Low Skill Economy, Wissenschaftszentrum Berlin für Sozialforschung, Discussion Papers FS I 91-7, Oktober 1991, 38 p.

REES Gareth, Sarah FIELDER, "The Services Economy, Subcontracting and the New Employment Relations: Contract Catering and Cleaning", Work, Employment and Society, Vol. 6, N° 3, pp. 347-368.

RITZER George, The McDonaldization of Society, Pine Forge Press, London 1993, 221 p.

ROUILLEAULTH H., "Changer le travail et faire évoluer les relations de travail", in TADDEI D. et CORIAT B., Made in France Le Livre de Poche, Paris 1993.

SABEL Charles, "The Re-emergence of Regional Economies", Discussion Paper FS I 89-3, Research Unit Labour Market and Employment, Wissenschaft Zentrum, Berlin 1989, 72 p.

SAINSAULIEU, "Le monde du travail", Ch. 8. pp. 189-213.

SANTELMANN Paul, "Ressources humaines et promotion des savoirs dans l'entreprise", Actualité de la formation permanente, N° 122, janvier-février 1993, pp. 15-23.

SAVY Michel, Pierre VELTZ et al. Les nouveaux espaces de l'entreprise, Datar, Editions de l'Aube, Paris 1993, 200 p.

SCOTT Alan, "Flexible Production Systems and Regional Development: the Rise of New Industrial Spaces in North America and Western Europe", International Journal of Urban and Regional Science, Vol. 12, N° 2, 1988, pp. 171-185.

SCOTT Alan J., "Flexible Production Systems: Analytical Tasks and Theoretical Horizons – A Reply to Lovering", International Journal of Urban and Regional Research, Vol. 15, N° 1, March 1991, pp. 130-134.

SCOTT Alan. J., "A Further Rejoinder to Lovering", International Journal of Urban and Regional Research, Vol 15, N° 1, 1991, pp. 302-304.

SEGRESTIN Denis, "A propos du nouveau modèle productif: questions d'efficience, questions de légitimité", Sociologie du travail, N° 1, 1993, pp. 49-61.

SEWELL Graham, Wilkinson BARRY, "Someone to watch over me": Survillance, Discipline and the Just-in Time Labour Process", Sociology, Vol. 20, N° 2, May 1992, pp. 271-289.

SEWELL Graham, "Management Information Systems for JIT Production", OMEGA, Journal of Management Sciences, Vol. 18, N° 5, 1990, pp. 491-503.

SINCLAIR Amanda, "The Tyranny of Team Ideology", Organization Studies, Vol. 13, N° 4, 1992, pp. 611-626.

SKORSTAD Egil, "Mass Production, Flexible Specialization and Just-in-time, Future Development Trends of Industria pp. I Production and Consequences on Conditions of Work", Futures, December 1991, pp.

STANKIEWICZ FranÁois, Les stratégies d'entreprises face aux ressources humaines: l'après-taylorisme Economica, Paris 1988, 264 p.

STARBUCK William H., "Learning by Knowledge Intensive Firms", Journal of Management Studies, Vol. 29, N° 6, November 1992, pp. 713-740.

STORPER Michaël, Alan SCOTT, "L'organisation du travail et les marchés de l'emploi locaux à l'ère de la production flexible", Revue Internationale du travail, N° 5, 1990, pp. 633-654.

STREECK Wolfgang, Interest Heterogeneity and Organizing Capacity – Two Class Logics of Collective Organization?, Discussion Paper – Research Unit Labour Market and Employment, Wissenschaftszentrum für Sozialforschnung, Berlin 1989, 37 p.

STREECK Wolfgang, "Skills and the Limits of Neo-Liberalism: The Enterprise of the Future as a Place of Learning", Work, Employment and Society, Vol. 3, N° 1, 1989, pp. 89-104.

STREECK Wolfgang, More Uncertainties: West German Unions Facing 1992, Discussion Paper – Research Unit Labour Market and Employment, Wissenschaftszentrum für Sozialforschnung, Berlin 1990, 37 p.

TANGUY Lucie, Quelle formation pour les ouvrfiers et les employés en France? La documentation française, Paris 1991, 142 p.

THIBAUD Paul, "Travail et individualisme", Esprit, N° 1, 1988, pp. 57-62.

TOMANEY John, "The Reality of Workplace Flexibility", Capital and Class, N° 40, Spring 1990, pp. 29-55.

VELTZ Pierre et Philippe ZARIFIAN, "Vers de nouveaux modèles d'organisation, Sociologie du travail, N° 1, 1993, pp. 3-25.

VIMONT Paul, "Le système éducatif face aux transformations de la relation "formation-emploi" dans les entreprises,", Chroniques de la SEDEIS, N° 13, 15 mars 1991, pp. 94-104.

WHITAKER Alan, "The Transformation in Work: Post-Fordism Revisited", in Michaël REED and Michaël HUGHES, Rethinking Organization, New Directions in Organization Theory and Analysis, Sage Publications, London 1992, pp. 184-206.

WOMACK James P., Daniel T. JONES, Daniel Roos, Le système qui va changer le monde – Après la production de masse, la production au plus juste, Dunod, Paris 1992, 349 p.

WOOD Stephen, "The Deskilling Debate, New Technology and Work Organization", Acta Sociologica, Vol. 30, N° 1, 1987, pp. 3-24.

ZARIFIAN Philippe, "Acquisition et reconnaissance des compétences dans une organisation qualifiante", Education permanente, N° 112, octobre 1992, pp. 15-22.

ZARIFIAN Philippe, Quels modèles d'organisation pour l'industrie européenne? L'émergence de la Firme coopératrice, L'Harmattan, Paris 1993, 287 p.

CEDEFOP — European Centre for the Development of Vocational Training

**The role of the company in generating skills:
the learning effects of work organisation
Synthesis report**

*Philippe Méhault,
Jacques Delcourt*

CEDEFOP Document

Luxembourg: Office for Official Publications of the European Communities

1998 — vii, 109 pp. — 21 x 29.7 cm

ISBN 92-828-2367-9

Price (excluding VAT) in Luxembourg: ECU 8

Venta • Salg • Verkauf • Πωλήσεις • Sales • Vente • Vendita • Verkoop • Venda • Myynti • Försäljning

BELGIQUE/BELGIË

Moniteur belge/Belgisch Staatsblad
Rue de Louvain 40-42/Leuvenseweg 40-42
B-1000 Bruxelles/Brussel
Tél. (32-2) 552 22 11
Fax (32-2) 511 01 84

Jean De Lannoy
Avenue du Roi 202/Koningslaan 202
B-1060 Bruxelles/Brussel
Tél. (32-2) 538 51 69
Fax (32-2) 538 08 41
E-mail: jean.de.lannoy@infoboard.be
URL: http://www.jean-de-lannoy.be

Librairie européenne/Europese Boekhandel
Rue de la Loi 244/Wetstraat 244
B-1040 Bruxelles/Brussel
Tél. (32-2) 295 26 39
Fax (32-2) 735 08 60

DANMARK

J. H. Schultz Information A/S
Herstedvang 10-12
DK-2620 Albertslund
Tlf. (45) 43 63 23 00
Fax (45) 43 63 19 69
E-mail: schultz@schultz.dk
URL: http://www.schultz.dk

DEUTSCHLAND

Bundesanzeiger Verlag
Breite Straße 78-80
Postfach 10 05 34
D-50667 Köln
Tel. (49-221) 20 29-0
Fax (49-221) 202 92 78
E-mail: vertrieb@bundesanzeiger.de
URL: http://www.bundesanzeiger.de

ΕΛΛΑΔΑ/GREECE

G. C. Eleftheroudakis SA
International Bookstore
Panepistimiou 17
GR-10564 Athina
Tel. (30-1) 331 41 80/1/2/3
Fax (30-1) 323 98 21
E-mail: elebooks@netor.gr

ESPAÑA

Mundi Prensa Libros, SA
Castelló, 37
E-28001 Madrid
Tel. (34-1) 431 33 99
Fax (34-1) 575 39 98
E-mail: libreria@mundiprensa.es
URL: http://www.mundiprensa.es

Boletín Oficial del Estado
Trafalgar, 27
E-28010 Madrid
Tel. (34-1) 538 21 11 (Libros)/
384 17 15 (Suscripciones)
Fax (34-1) 538 21 21 (Libros)/
384 17 14 (Suscripciones)
E-mail: webmaster@boe.es
URL: http://www.boe.es

FRANCE

Journal officiel
Service des publications des CE
26, rue Desaix
F-75727 Paris Cedex 15
Tél. (33) 140 58 77 01/31
Fax (33) 140 58 77 00

IRELAND

Government Supplies Agency
Publications Section
4-5 Harcourt Road
Dublin 2
Tel. (353-1) 661 31 11
Fax (353-1) 475 27 60

ITALIA

Licosa SpA
Via Duca di Calabria, 1/1
Casella postale 552
I-50125 Firenze
Tel. (39-55) 64 54 15
Fax (39-55) 64 12 57
E-mail: licosa@ftbcc.it
URL: http://www.ftbcc.it/licosa

LUXEMBOURG

Messageries du livre SARL
5, rue Raiffeisen
L-2411 Luxembourg
Tél. (352) 40 10 20
Fax (352) 49 06 61
E-mail: mdl@pt.lu

Abonnements:

Messageries Paul Kraus
11, rue Christophe Plantin
L-2339 Luxembourg
Tél. (352) 49 98 88-8
Fax (352) 49 98 88-444
E-mail: mpk@pt.lu
URL: http://www.mpk.lu

NEDERLAND

SDU Servicecentrum Uitgevers
Externe Fondsen
Postbus 20014
2500 EA Den Haag
Tel. (31-70) 378 98 80
Fax (31-70) 378 97 83
E-mail: sdu@sdu.nl
URL: http://www.sdu.nl

ÖSTERREICH

Manz'sche Verlags- und Universitätsbuchhandlung GmbH
Siebenbrunnengasse 21
Postfach 1
A-1050 Wien
Tel. (43-1) 53 16 13 34/40
Fax (43-1) 53 16 13 39
E-mail: auslieferung@manz.co.at
URL: http://www.austria.EU.net:81/manz

PORTUGAL

Imprensa Nacional-Casa da Moeda, EP
Rua Marquês de Sá da Bandeira, 16 A
P-1050 Lisboa Codex
Tel. (351-1) 353 03 99
Fax (351-1) 353 02 94, 384 01 32

Distribuidora de Livros Bertrand Ld.ª
Rua das Terras dos Vales, 4/A
Apartado 60037
P-2701 Amadora Codex
Tel. (351-1) 495 90 50, 495 87 87
Fax (351-1) 496 02 55

SUOMI/FINLAND

Akateeminen Kirjakauppa/Akademiska Bokhandeln
Pohjoisesplanadi 39/
Norra esplanaden 39
PL/PB 128
FIN-00101 Helsinki/Helsingfors
P./tfn (358-9) 121 41
F./fax (358-9) 121 44 35
E-mail: akatilaus@stockmann.mailnet.fi
URL: http://booknet.cultnet.fi/aka/index.htm

SVERIGE

BTJ AB
Traktorvägen 11
S-221 82 Lund
Tfn. (46-46) 18 00 00
Fax (46-46) 30 79 47
E-post: btjeu-pub@btj.se
URL: http://www.btj.se/media/eu

UNITED KINGDOM

**The Stationery Office Ltd
International Sales Agency**
51 Nine Elms Lane
London SW8 5DR
Tel. (44-171) 873 90 90
Fax (44-171) 873 84 63
E-mail: jill.speed@theso.co.uk
URL: http://www.the-stationery-office.co.uk

ISLAND

Bokabud Larusar Blöndal
Skólavördustig, 2
IS-101 Reykjavik
Tel. (354) 551 56 50
Fax (354) 552 55 60

NORGE

NIC Info A/S
Ostenjoveien 18
Boks 6512 Etterstad
N-0606 Oslo
Tel. (47-22) 97 45 00
Fax (47-22) 97 45 45

SCHWEIZ/SUISSE/SVIZZERA

OSEC
Stampfenbachstraße 85
CH-8035 Zürich
Tel. (41-1) 365 53 15
Fax (41-1) 365 54 11
E-mail: uleimbacher@osec.ch
URL: http://www.osec.ch

BĂLGARIJA

Europress-Euromedia Ltd
59, Bld Vitosha
BG-1000 Sofia
Tel. (359-2) 980 37 66
Fax (359-2) 980 42 30

ČESKÁ REPUBLIKA

NIS ČR — prodejna
Konviktská 5
CZ-113 57 Praha 1
Tel. (420-2) 24 22 94 33, 24 23 09 07
Fax (420-2) 24 22 94 33
E-mail: nkposp@dec.nis.cz
URL: http://www.nis.cz

CYPRUS

Cyprus Chamber of Commerce & Industry
Griva-Digeni 38 & Deligiorgi 3
Mail orders:
PO Box 1455
CY-1509 Nicosia
Tel. (357-2) 44 95 00, 46 23 12
Fax (357-2) 36 10 44
E-mail: cy1691_eic_cyprus@vans.infonet.com

MAGYARORSZÁG

Euro Info Service
Európa Ház
Margitsziget
PO Box 475
H-1396 Budapest 62
Tel. (36-1) 111 60 61, 111 62 16
Fax (36-1) 302 50 35
E-mail: euroinfo@mail.matav.hu
URL: http://www.euroinfo.hu/index.htm

MALTA

Miller Distributors Ltd
Malta International Airport
PO Box 25
LQA 05 Malta
Tel. (356) 66 44 88
Fax (356) 67 67 99

POLSKA

Ars Polona
Krakowskie Przedmiescie 7
Skr. pocztowa 1001
PL-00-950 Warszawa
Tel. (48-22) 826 12 01
Fax (48-22) 826 62 40, 826 53 34, 826 86 73
E-mail: ars_pol@bevy.hsn.com.pl

ROMÂNIA

Euromedia
Str. G-ral Berthelot Nr 41
RO-70749 Bucuresti
Tel. (40-1) 210 44 01, 614 06 64
Fax (40-1) 210 44 01, 312 96 46

SLOVAKIA

Slovak Centre of Scientific and Technical Information
Námestie slobody 19
SK-81223 Bratislava 1
Tel. (421-7) 531 83 64
Fax (421-7) 531 83 64
E-mail: europ@tbb1.sltk.stuba.sk

SLOVENIA

Gospodarski Vestnik
Zalozniska skupina d.d.
Dunajska cesta 5
SLO-1000 Ljubljana
Tel. (386) 611 33 03 54
Fax (386) 611 33 91 28
E-mail: belicd@gvestnik.si
URL: http://www.gvestnik.si

TÜRKIYE

Dünya Infotel AS
Istiklâl Cad. No: 469
TR-80050 Tünel-Istanbul
Tel. (90-212) 251 91 96
Fax (90-212) 251 91 97

AUSTRALIA

Hunter Publications
PO Box 404
3167 Abbotsford, Victoria
Tel. (61-3) 94 17 53 61
Fax (61-3) 94 19 71 54

CANADA

Subscriptions only/Uniquement abonnements:

Renouf Publishing Co. Ltd
5369 Chemin Canotek Road Unit 1
K1J 9J3 Ottawa, Ontario
Tel. (1-613) 745 26 65
Fax (1-613) 745 76 60
E-mail: renouf@fox.nstn.ca
URL: http://www.renoufbooks.com

EGYPT

The Middle East Observer
41, Sherif Street
Cairo
Tel. (20-2) 393 97 32
Fax (20-2) 393 97 32

HRVATSKA

Mediatrade Ltd
Pavla Hatza 1
HR-10000 Zagreb
Tel. (385-1) 43 03 92
Fax (385-1) 43 03 92

INDIA

EBIC India
3rd Floor, Y. B. Chavan Centre
Gen. J. Bhosale Marg.
400 021 Mumbai
Tel. (91-22) 282 60 64
Fax (91-22) 285 45 64
E-mail: ebic@giasbm01.vsnl.net.in

ISRAËL

ROY International
17, Shimon Hatarssi Street
PO Box 13056
61130 Tel Aviv
Tel. (972-3) 546 14 23
Fax (972-3) 546 14 42
E-mail: royil@netvision.net.il

Sub-agent for the Palestinian Authority:

Index Information Services
PO Box 19502
Jerusalem
Tel. (972-2) 627 16 34
Fax (972-2) 627 12 19

JAPAN

PSI-Japan
Asahi Sanbancho Plaza #206
7-1 Sanbancho, Chiyoda-ku
Tokyo 102
Tel. (81-3) 32 34 69 21
Fax (81-3) 32 34 69 15
E-mail: psijapan@gol.com
URL: http://www.psi-japan.com

MALAYSIA

EBIC Malaysia
Level 7, Wisma Hong Leong
18 Jalan Perak
50450 Kuala Lumpur
Tel. (60-3) 262 62 98
Fax (60-3) 262 61 98
E-mail: ebic-kl@mol.net.my

PHILIPPINES

EBIC Philippines
19th Floor, PS Bank Tower Sen.
Gil J. Puyat Ave. cor. Tindalo St.
Makati City
Metro Manilla
Tel. (63-2) 759 66 80
Fax (63-2) 759 66 90
E-mail: eccpcom@globe.com.ph

RUSSIA

CCEC
60-letiya Oktyabrya Av. 9
117312 Moscow
Tel. (70-95) 135 52 27
Fax (70-95) 135 52 27

SOUTH AFRICA

Safto
5th Floor Export House,
CNR Maude & West Streets
PO Box 782 706
2146 Sandton
Tel. (27-11) 883 37 37
Fax (27-11) 883 65 69

SOUTH KOREA

Kyowa Book Company
1 F1. Phyung Hwa Bldg
411-2 Hap Jeong Dong, Mapo Ku
121-220 Seoul
Tel. (82-2) 322 67 80/1
Fax (82-2) 322 67 82
E-mail: kyowa2@ktnet.co.kr

THAÏLANDE

EBIC Thailand
Vanissa Building 8th Floor
29 Soi Chidlom
Ploenchit
10330 Bangkok
Tel. (66-2) 655 06 27
Fax (66-2) 655 06 28
E-mail: ebicbkk@ksc15.th.com

UNITED STATES OF AMERICA

Bernan Associates
4611-F Assembly Drive
MD20706 Lanham
Tel. (800) 274 44 47 (toll free telephone)
Fax (800) 865 34 50 (toll free fax)
E-mail: query@bernan.com
URL: http://www.bernan.com

ANDERE LÄNDER/OTHER COUNTRIES/
AUTRES PAYS

Bitte wenden Sie sich an ein Büro Ihrer Wahl / Please contact the sales office of your choice / Veuillez vous adresser au bureau de vente de votre choix

NB: Country order: EU, EFTA, EU applicant countries, others

6/97

BEST COPY AVAILABLE

CEDEFOP

4 5 6 HX-89-95-050-EN-C

European Centre for the Development of Vocational Training
Marinou Antipa 12, GR-57001 Thessaloniki
Tel. (30-31) 49 01 11; fax (30-31) 49 01 02
E-mail: info@cedefop.gr
Internet: http://www.cedefop.gr

BEST COPY AVAILABLE

Price (excluding VAT) in Luxembourg: ECU 8

ISBN 92-828-2367-9

9 789282 823675 >

OFFICE FOR OFFICIAL PUBLICATIONS
OF THE EUROPEAN COMMUNITIES

L-2985 Luxembourg